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LANCASHIRE COUNTY COUNCIL

---

ANNUAL REPORT

*of the*

COUNTY ANALYST

*for*

THE YEAR 1957.



PRESTON :

PRINTED BY T. SNAPE & CO., LTD., BOLTON'S COURT.

1958.






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# CONTENTS

	Page
Public Health and Housing Committee, 1958 ... ..	v.
Staff of County Laboratory, 1958 ... ..	vi.
Table 1. Total samples examined, 1957 ... ..	6
Table 2. Total samples examined, 1912-1957 ... ..	7
 <i>Part 1.</i>	
Samples taken under the Food and Drugs Act, 1955... ..	7
New Orders made in 1957 ... ..	8
Table 3. Samples examined under the Food and Drugs Act during 1957 ... ..	10
The number of commodities examined ... ..	22
Total adulteration ... ..	22
Table 4. Percentage of adulteration of County Food and Drugs samples, 1948-1957 ... ..	23
Table 5. Analysis of County Food and Drugs samples ... ..	24
Table 6. Total adulteration. The County compared with other areas ... ..	24
Total adulteration.—England and Wales ... ..	24
Table 7. Percentage of adulteration for England and Wales, 1900-1938 ... ..	25
Table 8. Adulteration in the County Districts and in the areas of ten other Food and Drugs Authorities ... ..	26
Adulteration of milk in the County ... ..	30
Table 9. Percentages of adulteration of milk samples, 1948-1957 ...	30
Table 10. Milk.—Adulteration in each month of 1957 ... ..	31
Table 11. Analysis of milk adulteration ... ..	31
Table 12. Adulteration of the various grades of milk ... ..	32
“Serious” and “less serious” adulteration ... ..	32
Table 13. List of County adulterated milk samples which were the subject of legal proceedings, 1957 ... ..	34
Table 14. Milk adulteration, 1957.—The County compared with other areas ... ..	35
Table 15. Percentage of milk adulteration for England and Wales, 1900-1938 ... ..	36
Milk. General ... ..	36
The standards of quality for milk ... ..	37
Channel Islands milk and South Devon milk ... ..	38
The average composition of milk during the year ... ..	39
Table 16. Average composition of milk, 1957 ... ..	40
The average composition of milk for each month of the year ...	40
Table 17. The average composition of morning and evening milk during the year ... ..	41
The average composition of milk : compared with past years ...	41
Table 18. Average composition of milk 1910-1957 ... ..	42
Table 19. Composition of milk, 1957. The County compared with other areas ... ..	43
The composition of milk. Frequencies ... ..	43
Table 20. Frequencies. Fat ... ..	44
Table 21. Frequencies. Solids-not-fat ... ..	45
Samples of milk taken for comparison ... ..	45
Appeal-to-cow samples ... ..	46
Table 22. Analyses of appeal-to-cow samples ... ..	47
Table 23. Appeal-to-cow samples.—Frequencies : fat ... ..	50
Table 24. Appeal-to-cow samples.—Frequencies : solids-not-fat ...	52
Milks supplied to Schools, Day Nurseries, Children's Homes and Hostels for the Aged ... ..	52
Samples of milk deficient in solids-not-fat but reported as genuine	53
Adulteration of articles other than milk ... ..	54
Table 25. List of adulterated samples other than milk ... ..	55
The Labelling of Food Order ... ..	70

	Page
Ice-Cream ... ..	75
Table 26. Analyses of Ice-Cream Samples, 1946-1957 ... ..	78
Ice Lollies ... ..	79
Sausage, Meat Paste and Fish Paste ... ..	79
Fresh Fruit ... ..	83
Soft Drinks and Fruit Juices ... ..	84
The Flour (Composition) Regulations, 1956 ... ..	87
Sweets and Chocolates ... ..	89
The Food Standards (Saccharin Tablets), Order, 1953 ... ..	91
Samples containing extraneous matter ... ..	92
Samples containing Insects or Insect Remains ... ..	95
Vitamin Tablets, Capsules and Lozenges ... ..	96
Ammoniated Mercury Ointment ... ..	98
Borax ... ..	98
Sodium Bicarbonate ... ..	100
Camphorated Oil ... ..	101
Seidlitz Powders ... ..	101
Prosecutions ... ..	103
Table 27. County Fines and Costs, 1912-1957 ... ..	104
Table 28. List of County Districts, etc., in which prosecutions were instituted together with the results ... ..	105

### Part II.

The Milk (Special Designation) (Pasteurised and Sterilised Milk) Regulations, 1949 to 1953 ... ..	105
Phosphatase Test, Half-hour Methylene Blue Test and Turbidity Test ... ..	105
The Milk (Special Designations) (Specified Areas) Orders, 1952 to 1957 ... ..	108
Table 29. Phosphatase Tests, 1957 ... ..	110
Table 30. Half-hour Methylene Blue Tests, 1957 ... ..	110
Table 31. Turbidity Tests, 1957 ... ..	110

### Part III.

The Fertilisers and Feeding Stuffs Act, 1926 ... ..	111
Table 32. Composition of Fertilisers, 1957 ... ..	113
Table 33. Composition of Feeding Stuffs, 1957 ... ..	115

### Part IV.

Waters, Effluents, etc. ... ..	116
Waters for drinking and domestic use ... ..	116
Table 34. Waters, 1957 ... ..	117
Authorities submitting water samples ... ..	117
Toxic Metals in Water ... ..	117
Table 35. Samples Examined for Lead ... ..	118
Table 36. Samples Examined for Iron ... ..	118
Other Waters, Effluents, etc. ... ..	118

### Part V.

Miscellaneous Samples ... ..	119
Atmospheric Pollution Investigations ... ..	119
Fig. I. Seasonal Variation of Contents of Soot Deposit Gauge.— Borough of Leigh ... ..	121
Table 37. Soot Gauge Observations.—Borough of Leigh ... ..	122
Table 38. Atmospheric Sulphur Determinations.—Borough of Leigh ... ..	122
Other Miscellaneous Samples ... ..	122
Table 39. Mineral Oil content of Mussels ... ..	128



# PUBLIC HEALTH AND HOUSING COMMITTEE (1958)

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**The Vice-Chairman of the County Council :**

COUNTY ALDERMAN SIR ALFRED BATES, M.C., D.L.

**The Chairman of the Finance Committee :**

COUNTY COUNCILLOR J. SELWYN JONES, J.P.

**The Chairman of the Health Committee :**

COUNTY ALDERMAN T. HOURIGAN, J.P.

**Chairman of Committee :**

COUNTY ALDERMAN J. W. THORLEY

**Vice-Chairman :**

COUNTY COUNCILLOR F. L. NEEP

**County Aldermen :**

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H. J. Brett, Esq.

Sir Thomas Tomlinson, J.P.  
Lady Worsley-Taylor, C.B.E.,  
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J. H. S. Terry, Esq.  
F. Whitworth, Esq.  
J. Wylie, Esq.

One Vacancy.

# LANCASHIRE COUNTY LABORATORY

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## STAFF 1958.

### County Analyst :

G. H. WALKER, PH.D., B.Sc., F.R.I.C.

### Deputy County Analyst :

A. C. BUSHNELL, F.R.I.C.

### Senior Assistant Analyst :

J. COTTOM, F.R.I.C.

### Second Senior Assistant Analyst :

M. S. GREEN, B.Sc., A.R.I.C.

### Assistant Analysts :

MISS C. MAYNE, B.Sc., A.M.C.T., A.R.I.C.

R. E. BRIDGE, M.Sc.

J. L. WILLIAMS.

R. STUBBS, B.Sc.

MRS. D. FORBES, B.Sc.

A. HOLLIS, B.Sc.

G. W. EARNSHAW.

K. FISHER.

### Laboratory Assistants :

MRS. B. SCOTT.

MRS. S. NEWTON

MISS M. HARRISON.

### Clerical Staff :

E. L. SIMPSON, T.D., F.C.C.S.

H. HIGGINSON, A.C.C.S.

MISS O. THOMAS.

MISS S. HARPLEY

### Laboratory Attendant :

MRS. A. E. AITKEN.

# LANCASHIRE COUNTY COUNCIL

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## ANNUAL REPORT OF THE COUNTY ANALYST FOR THE YEAR 1957.

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*To the Chairman and Members of the Lancashire County Council.*

I have the honour to submit for your consideration my twelfth Annual Report which deals with the work carried out in the County Laboratory during the year ended 31st December, 1957. The total number of analyses and tests carried out in this period was 13,412 ; in order to facilitate reference these have been grouped under the following headings :—

- Part I.        Reports on Samples taken under the Food and Drugs Act, 1955.    Page 7.
- Part II.       Report on Heat-treated Milk Samples taken under the Milk (Special Designation) (Pasteurised and Sterilised Milk) Regulations, 1949 to 1953.    Page 105.
- Part III.      Report on Samples taken under the Fertilisers and Feeding Stuffs Act, 1926.    Page 111.
- Part IV.       Report on Waters, Effluents, etc.    Page 116.
- Part V.        Miscellaneous (including Atmospheric Pollution).    Page 119.

The total number of samples from all sources examined during the year is the second highest recorded for the laboratory and is over double the number examined annually in any year prior to 1947. The number of samples examined for the County under the Food and Drugs Act and the Fertilisers and Feeding Stuffs Act (excluding, however, milk samples submitted for Phosphatase, Methylene Blue or Turbidity Tests) was 8,366 and the number of Food and Drugs samples submitted by the ten Autonomous Food and Drugs Authorities, for which your Analyst acts as Public Analyst, was 2,009.



The number of Food and Drugs samples (excluding appeal-to-cow samples) submitted by the County Sampling Officers during the year 1957 was 8,239, as against 8,215 during the previous year and 8,373 in the year 1955 ; the rate of samples per 1,000 of the population was 5·88 in the year under review, 5·94 in 1956 and 6·13 in 1955.

The number of County Food and Drug Samples has, therefore, been maintained well above the level reached in 1947 (6,819). Prior to 1947, the highest figure was 5,263 in the year 1933. During the year the number of samples found to be adulterated or unsatisfactory was 349 ; this corresponds to an adulteration rate of 4·2 per cent., as against 4·1 per cent. in the year 1956, and 4·9 per cent. in the year 1955. Table 4 gives the percentage adulteration for the last 10 years and it will be seen that there has been an appreciable drop in this figure since the year 1948. Viewed in the light of the figures for the last 10 years the adulteration rate for the year, 1957, cannot be regarded as altogether unsatisfactory and it is, in fact, the second time since the year 1939 that the adulteration rate has come within the range for the 10 years, 1929–1938, which preceded the war when the percentage adulteration varied from 2·6 to 4·2.

In addition to Food and Drugs samples the County Sampling Officers submitted 1,178 samples of heat-treated milk for examination by the Phosphatase test, the half-hour Methylene Blue test or by the Turbidity test as against 1,152 samples submitted in the previous year. Of these, 10 failed to pass the Phosphatase test and 10 samples failed to pass the statutory Methylene Blue test, the corresponding figures for the year 1956 being 13 and four. The number of Specified Areas in the County in which only designated milks can be sold is continually increasing due to the making of further Milk (Special Designations) (Specified Areas) Orders, one more of which affecting the County came into operation during the year under review. By the end of 1957, a total of 55 of the 92 County Districts in the County Food and Drugs Area had become Specified Areas. As a result of this policy on the part of the Government, more and more milk sold under special designations will be consumed and in view of the fact that it is the duty of the Food and Drugs Authority to enforce the provisions of Section 37 of the Food and Drugs Act, 1955, it follows that an increased number of samples is now being taken by County Sampling Officers in the County Districts concerned for submission to the County Laboratory for examination by the statutory Phosphatase, Half-hour Methylene Blue or Turbidity tests.

As usual some two-thirds of the Food and Drugs samples submitted by the County Sampling Officers consisted of samples of milk. Of 5,411 milk samples 190 were found to be adulterated which represents an adulteration rate of 3·5 per cent. The corresponding figure for the year



1956 was 3·7 per cent. and for the year 1955 it was 4·8 per cent. Milk adulteration in the County of Lancaster has shown consistent and appreciable decreases since the year 1946. It is reasonable to assume that these decreases are in some measure due to the increased sampling which has occurred since that year.

The adulteration rate for samples other than milk was 5·6 per cent. and is 0·6 per cent. higher than that obtained in the year 1956 when the figure was 5·0 per cent. The adulteration rate for the last 10 years has varied from 2·8 to 5·6 per cent., the former figure in the year 1950 and the latter in the year 1957. The commodities which showed a relatively high proportion of unsatisfactory samples and, therefore, contributed especially to the adulteration rate included flour, ice-cream, sausages, tincture of iodine and samples whose labels did not conform to the requirements of the Labelling of Food Order. An examination, however, of table 25 and the sections of the report concerned with the commodities just mentioned will bring to light the fact that many of the samples reported as unsatisfactory showed only slight irregularities in composition or minor infringements of labelling requirements.

Relatively few new Statutory regulations which affect the work of the Public Analyst have been made during the year, but mention should be made of the Public Analysts Regulations and the Colouring Matter in Food Regulations. The former prescribe a new form of certificate to be given by a Public Analyst after he has analysed a sample. The various provisions of the Colouring Matter in Food Regulations come into operation on dates between June, 1957 and June, 1959 and they prescribe a relatively short list of permitted food colours, including 30 coal tar colours. The new regulations, therefore, approach the question of food colours in a quite different manner to the Public Health (Preservatives, etc., in Food) Regulations, 1925, which formerly were concerned with this matter; the latter simply prohibited the use of a few specific colours while all other colouring matters, of which there is an almost unlimited number, were allowed in food. Reports of the Food Standards Committee of the Ministry of Agriculture, Fisheries and Food published during the year recommend that the present permitted limits for fluorine in food should be made much more stringent and that the use of saccharin in ice-cream should be prohibited. It is also recommended that the present ice-cream standards should be amended to provide for the sale of "dairy ice-cream" in which the whole of the fat content will be milk fat and for the sale of "milk-ice" which will contain less fat than ordinary ice-cream but this will also consist entirely of milk fat.

During the year under review 45 samples were reported upon adversely because they contained foreign matter and a further eight samples were found to contain insects or insect remains. Many of these

are described in the appropriate sections of the report and it will be seen that the substances found in these samples were of a very varied nature. Of the eight County soft drink samples which were reported upon adversely as many as three were found to contain foreign matter and successful legal proceedings were instituted against each of the packers concerned. In another instance, reported upon page 125, legal proceedings were instituted in respect of a fragment of broken glass stated to have been found in a bottle of school milk but the Magistrates dismissed the case. In view of the importance of this matter the County Council entered an Appeal by way of case stated. This Appeal has now been heard in the High Court, the judgment being that the offence was proved and that the case must, therefore, be referred back to the Magistrates.

A separate section of the report deals with tablets, capsules and lozenges containing vitamins. Thirty samples coming under this heading were examined during the year and it will be noted that the work on these has taken in the determination of a total of seven different vitamins. Vitamins have also been determined in foods such as margarine, flour and commodities for which special claims were made on the label. With regard to the latter it will be noted, in the section dealing with the Labelling of Food Order, that several food labels made unjustified or incorrectly worded claims with regard to vitamins, including such a claim (found to be partially justified) in respect of a sample of potato crisps.

Reference is made in the report to two samples submitted as bicarbonate of soda, taken from the same prepacked stock in a shop. Both of these proved upon analysis to contain only approximately 50 per cent. of bicarbonate of soda the remainder being borax or boric acid. In view of the relatively large doses of bicarbonate of soda sometimes taken internally this mistake in packing might have had serious consequences. Although borates have been prohibited as food preservatives in this country since the year 1925 (except in bacon and margarine during and for some years subsequent to the war) it is rather surprising to find that directions for use as a food preservative were still included in the labels of two samples of pre-packed borax submitted during the year under review. Of eight samples of ammoniated mercury ointment examined two did not bear on the label the word "Poison" as required by the Pharmacy and Poisons Act, 1933. This omission on the part of the pharmacists concerned was rather astonishing particularly in connection with the sale of a compound of mercury which quite recently has, like mercurial teething powders, been shown to be the cause of Pink disease in young children.

In the section of the report dealing with fresh fruit it will be noted that some apples are still being imported containing, on their skins, excessive amounts of lead and arsenic due to their having been sprayed



during growth with lead arsenate to prevent damage by insects. While the spraying of apple trees with lead arsenate may be justified, there is no possible justification for packing fruit known to have been sprayed in this manner without first either checking that the amounts of lead and arsenic still remaining are not excessive, or cleansing the fruit by washing. In at least some countries fruit washing machines are extensively used for this purpose.

In Part III of this report, which is concerned with samples examined under the Fertilisers and Feeding Stuffs Act, 1926, it will be noted that the Minister of Agriculture, Fisheries and Food gave his consent to two prosecutions against one manufacturer in respect of two samples of animal feeding stuffs which were found to be seriously deficient in their protein contents. In view of the fact that protein is probably the main factor determining the value of a feeding stuff, and the requirement under the Act to declare the amount present in compound feeding stuffs, it is only on extremely rare occasions that any serious deficiency is detected.

Part V of the report is concerned with samples of a miscellaneous nature which cannot be conveniently included in previous sections of the report. Investigations which may be of interest include the work done on atmospheric pollution, the examination of milk bottles and other food containers contaminated by foreign matter and the testing of mussels for mineral oil contamination.

The staff of the County Laboratory is relatively small in number and staffing difficulties, particularly the replacement of experienced staff who leave to take up more lucrative appointments, continue to place an added strain on the resources of the laboratory. The amount of work described in this report has only been successfully carried out by the loyal support which I have received from all members of the staff and I welcome this opportunity of expressing my appreciation of the efforts of both the technical and clerical staff of the laboratory and the willing co-operation of the Sampling Officers of the County and of the Autonomous Food and Drugs Authorities.

In conclusion, I wish to tender to the members of the County Council and to the County Medical Officer of Health, my most grateful thanks for their continued encouragement and support.

I have the honour to be, Mr. Chairman, Ladies and Gentlemen,

Your obedient Servant,

GEO. H. WALKER,

County Analyst.

The County Laboratory,  
County Hall,  
Preston.

31st July, 1958.

## TOTAL SAMPLES EXAMINED.

During the year 1957, a total of 13,412 analyses and tests have been carried out in the County Laboratory. They are classified in the following table :—

*Table 1.*

## County Samples—

Food and Drugs Act (including 5,411 milks)	...	8,239
Appeal-to-Cow	... ..	77
Fertilisers and Feeding Stuffs Act, 1926	... ..	50

## Food and Drugs Act samples (including two Appeal-to-Cow) from the following autonomous Food and Drugs Authorities—

Borough of Chorley	... ..	104
Borough of Darwen	... ..	133
City of Lancaster	... ..	154
Borough of Leigh	... ..	137
Borough of Middleton	... ..	100
Borough of Morecambe and Heysham	...	172
County Borough of Preston...	... ..	567
County Borough of Southport	... ..	352
Urban District of Huyton-with-Roby	...	251
Urban District of Newton-le-Willows	...	39
	—————	2,009

## Fertilisers and Feeding Stuffs Act, 1926—

Preston County Borough	... ..	18
Southport County Borough...	... ..	12

## Other Samples (from all sources including the County)—

Potable Waters	... ..	83
Other Waters and Effluents	... ..	38
Miscellaneous...	... ..	387
Milk Samples.—Phosphatase Tests	... ..	1,158
Milk Samples.—Methylene Blue Tests	... ..	1,152
Milk Samples.—Turbidity Tests	... ..	189

Total number examined ... 13,412

The total number of samples analysed in the year is compared with the total numbers similarly classified for the previous years 1912–1956, in table 2. It will be seen from the table that, since the year 1912, the grand total of samples examined amounts to 295,165.



Table 2.

*Total number of Samples examined during the years 1912 to 1957.*

Year.	County Food and Drugs.	Other Authorities Food and Drugs.	County Appeal-to-cow Samples.	Other Authorities Appeal-to-cow Samples.	Fertilisers and Feeding Stuff's Act.	Waters and Effluents.	Miscellaneous and Departmental.	Total Phosphate, Methylene Blue and Turbidity Tests	Total.
1912-1945	151597	2312	2019	50	723	2269	2785	...	161755
1946	4122	576	107	8	29	51	36	67	4996
1947	6819	962	110	13	34	48	35	1062	9083
1948	6958	783	59	13	31	46	88	1052	9030
1949	7700	1060	53	10	52	77	98	1425	10475
1950	8104	1040	38	1	58	113	149	1595	11098
1951	8501	1337	28	9	54	196	203	1602	11930
1952	8622	1418	40	12	53	126	208	1745	12224
1953	8635	1345	50	11	59	112	237	1797	12246
1954	8089	1612	67	3	62	84	250	1949	12116
1955	8373	1983	49	5	76	118	288	2463	13355
1956	8215	2177	27	11	59	120	328	2508	13445
1957	8239	2007	77	2	80	121	387	2499	13412
1912-1957	243974	18612	2724	148	1370	3481	5092	19764	295165

### PART I.—SAMPLES TAKEN UNDER THE FOOD AND DRUGS ACT, 1955.

The Food and Drugs Act, 1955, came into operation on the 1st January, 1956, and it consolidates and places on a permanent footing those parts of the 1938 Act and post-war Acts and Regulations which were in operation up to the 1st January, 1956.

It is usual in this report to draw attention to any new Regulations made during the year under review which have special bearing on the work of the Public Analyst. The following list contains the more important of these :—

The Public Analysts Regulations, 1957.

The Colouring Matter in Food Regulations, 1957.

The Milk (Special Designations) (Specified Areas) Order, 1957.

The Milk (Special Designations) (Specified Areas) (No. 2) Order, 1957.

In addition to the above new Regulations the Minister of Agriculture, Fisheries and Food and the Minister of Health approved for publication during the year 1957 two reports of the Food Standards Committee, one of these makes revised recommendations for limits for the fluorine content of foods and the other is concerned with the standard of composition for ice-cream. The above mentioned Regulations and Reports are described briefly in the following paragraphs or in the sections of this report which deal with the commodities concerned.

The Public Analysts Regulations, 1957, are substantially the same as the Public Analysts Regulations, 1938, and they re-enact the requirement as to qualifications to be possessed by persons appointed to be Public Analysts. They also prescribe the form of certificate to be given by a Public Analyst after he has analysed a sample submitted under the Food and Drugs Act. The new form of certificate of analysis differs somewhat from that prescribed under the 1938 Act. The main differences are that provision is made in the new certificate for the sending (under Section 92 (4) of the Act) of a sample by the Public Analyst, to whom it was originally submitted, to another Public Analyst for analysis ; the Public Analyst is also given much greater freedom in the new form of certificate as to the way in which he sets out the result of his analysis and the notes included in the Regulations now specifically mention that he may state in his observations his opinion as to whether and in what respect, a label or advertisement relating to a sample is incorrect or misleading.

The Preservatives Sub-Committee of the Food Standards Committee of the Ministry of Food published in 1954 a report on the use of colouring matter in foods and in 1955 a supplementary report was published. Both of these reports were discussed in some detail in my report for the year 1955. The Colouring Matter in Food Regulations, 1957, give effect to the main recommendations made in the above mentioned reports and revoke the provisions of the Public Health (Preservatives, etc. in Food) Regulations, 1925 to 1953, in so far as they relate to colouring matter in food. The new Regulations prohibit the sale for human consumption of food which contains added colouring matter other than the permitted colours



listed in the 1st Schedule to the Regulations. The list of permitted colours includes :—30 coal tar colours, natural vegetable colours normally used in foods, caramel, the colouring matter from cochineal, carbon black, Iron oxide, titanium dioxide, ultramarine, the aluminium or calcium salts of permitted colours and, for certain purposes only, metallic silver or aluminium in leaf or powder form. The addition of any colouring matter to certain raw and unprocessed foods (except for marking purposes) is prohibited by the Regulations, with the one exception that citrus fruit may be coloured with permitted colouring matter if a declaration of its presence is made in the manner prescribed. The sale, labelling and advertising of colouring matter and colouring and flavouring compounds for use in food is also controlled by the Regulations and any food certified by a public analyst to contain colouring matter not permitted by the Regulations may be treated for the purpose of Section 9 of the Food and Drugs Act as being food unfit for human consumption. The Regulations are to be enforced by Food and Drugs Authorities and by Port Health Authorities (in so far as they relate to importation) and it will not be necessary to give notice to the Minister of Agriculture, Fisheries and Food of intention by a Council to institute proceedings relating to labelling and advertising offences under these Regulations. The various provisions of the Regulations come into operation on dates between the 30th June, 1957, and the 30th June, 1959, but they do not apply to food or colouring matter intended for export.

The Association of Public Analysts, foreseeing the making of the above Regulations, some time ago set up a Committee to report upon methods of identifying permitted colouring matters in food. This Committee has already done extremely valuable work which will be of great assistance to all Public Analysts. It should of course be borne in mind that while there are only 30 permitted coal-tar colours, the number of non-permitted dyes is almost countless. The separation and identification of the permitted colours is in itself by no means simple but the classification and identification of a non-permitted colour could be a very time-consuming investigation.

The Fluorine in Food Order, 1947, was made following the report, published in May, 1946, of the Inter-Departmental Committee on Food Standards which drew attention to the fact that, because of the then supply position, some of the acid calcium phosphate used for food purposes was being manufactured from rock phosphate highly contaminated with fluorine. The result being that the acid calcium phosphate itself contained abnormally high and undesirable amounts of fluorine. The 1947 Order fixed maximum fluorine limits of 300 parts per million for acidic phosphates, 100 or 133 parts per million for baking powders depending on their strength and eight parts per million for self-raising flour. In 1953, however, the

Food Standards Committee published a report recommending that the maximum limits prescribed by the Order should be substantially reduced because it was no longer necessary to manufacture acid calcium phosphate for food purposes from rock phosphate and it was felt that the Statutory limits were now higher than necessary for good commercial practice. The further report published in the year under review slightly revises the 1953 Report recommendations, following representations from trade and other interests, to the effect that the Fluorine in Food Order, 1947, should be amended so that the limits for fluorine in foods should be :—(1) acidic phosphates, 30 parts per million, (2) any food (not included in (3) and (4) below) containing acidic phosphates, 30 parts per million of the acidic phosphates present, (3) baking powder and golden raising powder, 15 parts per million and (4) self-raising flour and similar mixtures, 3 parts per million. It will be noted that the proposed limits are very much lower than those at present in force.

*Particulars of Samples of Food and Drugs submitted by County  
Sampling Officers.*

In Table 3 there is a list of all the articles of food and drugs which were submitted during the year 1957 from the County of Lancaster together with the number of each kind and also the number found to be adulterated.

*Table 3.  
Samples examined under the Food and Drugs Act during 1957.*

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Almonds, Ground ...	...	13	...	13	...	1	...	1
Almond Oil ...	...	9	...	9	...	...	...	...
Almond Paste ...	...	2	...	2	...	2	...	2
Ammoniated Mercury Ointment ...	...	9	...	9	...	2	...	2
Apple Vinegar ...	...	1	...	1	...	...	...	...
Arrowroot ...	...	21	...	21	...	...	...	...
Aspirin Mixture (Compound) B.P.C. ...	...	1	...	1	...	1	...	1
Aspirin Tablets ...	...	30	...	30	...	...	...	...
Aspirin Tablets, Buffered ...	...	1	...	1	...	...	...	...



Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Aspirin Tablets, Childrens ...	...	5	...	5	...	...	...	...
Aspirin, Phenacetin and Caffeine Tablets ...	...	2	...	2	...	...	...	...
Aspirin, Phenacetin, Caffeine and Quinine Tablets...	...	1	...	1	...	...	...	...
Baby Food ...	...	1	...	1	...	...	...	...
Bacon ...	...	32	...	32	...	...	...	...
Baking Powder ...	...	29	...	29	...	2	...	2
Barley ...	...	18	...	18	...	...	...	...
Batter Mixture ...	...	1	...	1	...	...	...	...
Beer, Canned ...	...	1	...	1	...	...	...	...
Biscuits ...	...	5	...	5	...	2	...	2
Bismuth Lozenges, Compound ...	...	11	...	11	...	...	...	...
Bismuthated Magnesia Tablets ...	...	1	...	1	...	...	...	...
Black Beer ...	...	2	...	2	...	2	...	2
Blancmange Powder ...	...	11	...	11	...	...	...	...
Borax ...	...	18	...	18	...	2	...	2
Borax and Honey ...	...	2	...	2	...	...	...	...
Boric Acid, Powder and Crystals ...	...	10	...	10	...	...	...	...
Boric Acid Ointment ...	...	15	...	15	...	1	...	1
Brandy ...	...	1	...	1	...	...	...	...
Bread ...	...	30	3	33	...	3	3	6
Bread, Brown ...	...	7	...	7	...	1	...	1
Bread, Fancy (Fruit Malt Loaf) ...	...	1	...	1	...	1	...	1

Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Bread, Starch Reduced ...	...	2	...	2	...	...	...	...
Butter ...	...	56	...	56	...	...	...	...
Caffeine Tablets ...	...	2	...	2	...	...	...	...
Cake Decorations, Edible ...	...	6	...	6	...	...	...	...
Cake Mixture, Sweetened ...	...	1	...	1	...	...	...	...
Camphorated Oil ...	1	22	...	23	...	1	...	1
Camphor, Mustard and Other Oils, Compound ...	...	1	...	1	...	...	...	...
Caraway Seeds ...	...	3	...	3	...	...	...	...
Castor Oil ...	...	16	...	16	...	...	...	...
Cereal, Breakfast ...	...	1	...	1	...	...	...	...
Cheese (including Processed) ...	...	35	...	35	...	1	...	1
Cheese Spread (including one Tomato) ...	...	5	...	5	...	1	...	1
Cherry Ginger Concentrate ...	...	1	...	1	...	...	...	...
Chicken, Chopped, Canned ...	...	2	...	2	...	1	...	1
Chicory and Coffee Essence, Liquid, Sweetened ...	...	1	...	1	...	...	...	...
Chocolate Cake Coating ...	...	1	...	1	...	...	...	...
Chocolate, Drinking ...	...	5	...	5	...	...	...	...
Chutney ...	...	5	...	5	...	1	...	1
Cider ...	...	2	...	2	...	...	...	...
Cinnamon, Ground ...	...	5	...	5	...	...	...	...
Cloves, Ground ...	...	2	...	2	...	...	...	...

Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Cocoa ... ..	...	16	...	16	...	...	...	...
Cocoanut, Desiccated ... ..	...	2	...	2	...	...	...	...
Cod Liver Oil ... ..	...	7	...	7	...	...	...	...
Cod Liver Oil Capsules ... ..	...	1	...	1	...	...	...	...
Cod Liver Oil Emulsion ... ..	...	1	...	1	...	...	...	...
Codeine Tablets, Compound ... ..	...	9	...	9	...	...	...	...
Coffee ... ..	...	26	...	26	...	...	...	...
Coffee Extract, dry ... ..	...	3	...	3	...	...	...	...
Coffee and Chicory Mixture, Dry ... ..	...	5	...	5	...	...	...	...
Coffee and Chicory Extract Mixture, Dry ... ..	...	3	...	3	...	...	...	...
Coffee and Chicory Essence, Liquid, Sweetened ... ..	...	9	...	9	...	...	...	...
Cold Cure ... ..	...	1	...	1	...	...	...	...
Colouring Materials ... ..	...	1	...	1	...	...	...	...
Cooking Fat ... ..	...	25	...	25	...	...	...	...
Cordial Essence ... ..	...	2	...	2	...	...	...	...
Cornflour ... ..	...	16	...	16	...	...	...	...
Cough Medicine ... ..	...	1	...	1	...	...	...	...
Cream, Single and Double ... ..	...	10	...	10	...	...	...	...
Cream, Sterilized ... ..	...	6	...	6	...	...	...	...
Cream, Clotted ... ..	...	1	...	1	...	...	...	...
Cream of Tartar ... ..	...	2	...	2	...	...	...	...
Curry Powder ... ..	...	9	...	9	...	...	...	...
Custard Mix ... ..	...	1	...	1	...	...	...	...

Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Custard Powder ...	...	35	1	36	...	1	...	1
Digestive Mints ...	...	1	...	1	...	...	...	...
Dripping ...	...	9	...	9	...	...	...	...
Epsom Salts ...	...	31	...	31	...	...	...	...
Fever Mixture ...	...	1	...	1	...	...	...	...
Figs, Syrup of ...	...	2	...	2	...	...	...	...
Fish (Smoked Cod Fillet) ...	...	1	...	1	...	...	...	...
Fish Cakes ...	...	5	...	5	...	...	...	...
Fish, Canned ...	...	20	...	20	...	...	...	...
Fish Paste ...	1	18	...	19	1	1	...	2
Fish, Potted ...	...	2	...	2	...	...	...	...
Flavouring Materials... ..	...	4	...	4	...	...	...	...
Flour ...	...	44	2	46	...	5	2	7
Flour, self-raising ...	...	43	...	43	...	...	...	...
Flour Confectionery (Jam Tarts, etc.)	...	73	...	73	...	2	...	2
Friars Balsam ...	...	1	...	1	...	...	...	...
Fruit, Bottled in Syrup ...	...	1	...	1	...	...	...	...
Fruit, Canned ...	...	56	...	56	...	1	...	1
Fruit, Curd... ..	...	47	...	47	...	1	...	1
Fruit, Dried ...	...	28	...	28	...	...	...	...
Fruit Flavour, Sweetened (Powder) ...	...	1	...	1	...	...	...	...
Fruit, Fresh (Apples, Oranges, etc.) ...	...	33	...	33	...	3	...	3
Fruit Juices (Bottled and Canned) ...	...	18	...	18	...	1	...	1



Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Gelatine ... ..	...	2	...	2	...	...	...	...
Gin ... ..	11	...	...	11	...	...	...	...
Ginger, Ground ...	...	9	...	9	...	...	...	...
Ginger (Preserved and Crystallised)	...	2	...	2	...	...	...	...
Glauber's Salt ...	...	8	...	8	...	3	...	3
Glucose Tablets ...	...	2	...	2	...	...	...	...
Glycerin ... ..	...	45	...	45	...	6	...	6
Golden Raising Powder ...	...	16	...	16	...	...	...	...
Gravy Browning ...	...	7	...	7	...	...	...	...
Gravy Powder ...	...	6	...	6	...	...	...	...
Gravy Salt ... ..	...	2	...	2	...	...	...	...
Halibut Liver Oil Capsules ...	...	3	...	3	...	...	...	...
Ham and Chicken, Minced Bottled ...	...	1	...	1	...	...	...	...
Headache Tablets ...	...	2	...	2	...	...	...	...
Health Salts ... ..	...	1	...	1	...	...	...	...
Herbal Medicine ...	...	2	...	2	...	...	...	...
Herbs, Dried, Culinary ... ..	...	9	...	9	...	...	...	...
Honey ... ..	...	2	...	2	...	...	...	...
Horseradish Sauce...	...	1	...	1	...	...	...	...
Ice-Cream ... ..	2	48	...	50	2	9	...	11
Ice-Cream, Cold Mix Powder ...	...	1	...	1	...	...	...	...
Ice Lollies ... ..	...	9	...	9	...	4	...	4
Iodine, Tincture of (includes one colourless) ...	...	18	...	18	...	7	...	7
Jam ... ..	...	21	...	21	...	...	...	...

Table 3—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Jelly, Table ...	...	31	...	31	...	2	...	2
Jelly, Table, Compound ...	...	1	...	1	...	...	...	...
Kali ...	...	1	...	1	...	...	...	...
Lard ...	...	64	2	66	...	...	...	...
Laxative (two chewing gum, one chocolate) ...	...	3	...	3	...	...	...	...
Liquorice Powder, Compound ...	...	9	...	9	...	1	...	1
Malt Extract with Cod Liver Oil ...	...	1	...	1	...	...	...	...
Malt, Milk and Cocoa Beverage ...	...	2	...	2	...	...	...	...
Margarine ...	...	64	1	65	...	...	...	...
Marmalade ...	...	2	1	3	...	...	...	...
Marshmallow Creme ...	...	1	...	1	...	...	...	...
Marzipan ...	...	9	...	9	...	2	...	2
Meat, Canned ...	...	57	...	57	...	1	...	1
Meat, Cooked ...	...	2	...	2	...	...	...	...
Meat Paste ...	...	11	...	11	...	...	...	...
Meat Pies (including 10 Pork Pies) ...	...	34	...	34	...	1	...	1
Meat, Potted ...	...	3	...	3	...	...	...	...
Meat Pudding, Canned ...	...	2	...	2	...	...	...	...
Meringue Powder ...	...	1	...	1	...	...	...	...
Milk ...	3,118	1,991	302	5,411	94	83	13	190
Milk, Channel Islands ...	154	30	...	184	3	2	...	5
Milk, Condensed, Full Cream, Sweetened ...	...	3	...	3	...	...	...	...

Table 3—continued.

Samples.	Number examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Milk, Condensed, Special, Full Cream, Sweetened	...	8	...	8	...	...	...	...
Milk, Condensed, Full Cream, Unsweetened ...	...	11	...	11	...	...	...	...
Milk, Condensed, Skimmed, Sweetened ...	...	8	...	8	...	...	...	...
Milk, Dried... ...	...	2	5	7	...	...	...	...
Milk Flavouring ...	...	2	...	2	...	...	...	...
Mincemeat ... ...	...	20	...	20	...	...	...	...
Mint Sauce ...	...	1	...	1	...	...	...	...
Mustard Compound ...	...	8	...	8	...	...	...	...
Mustard, Liquid ...	...	4	...	4	...	...	...	...
Nuts, Cashew, Ground ...	...	1	...	1	...	...	...	...
Nut Paste ... ...	...	1	...	1	...	...	...	...
Nutmeg Flavoured Compound ...	...	1	...	1	...	...	...	...
Nutmeg, Ground ...	...	3	...	3	...	...	...	...
Oatmeal ... ...	...	31	...	31	...	1	...	1
Oats, Breakfast ...	...	4	...	4	...	...	...	...
Olive Oil ... ...	...	26	...	26	...	...	...	...
Olives, Stuffed ...	...	2	...	2	...	...	...	...
Onion Sauce Powder ...	...	1	...	1	...	...	...	...
Pancake and Yorkshire Pudding Mixture ...	...	5	...	5	...	...	...	...
Paraffin, Liquid ...	...	12	...	12	...	...	...	...
Peanut Butter ...	...	3	...	3	...	2	...	2
Penicillin Tablets ...	...	10	...	10	...	...	...	...
Pepper, White ...	...	15	...	15	...	...	...	...

Table 3—continued.

Samples.	Number examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Pickles ... ..	...	66	...	66	...	...	...	...
Pickled Beef with Brine ... ..	...	1	...	1	...	1	...	1
Pie Filling, Lemon Flavoured ... ..	...	1	...	1	...	...	...	...
Pie Filling, Apple, Canned ... ..	...	1	...	1	...	...	...	...
Polony ... ..	...	4	...	4	...	1	...	1
Potato Cake Mixture ... ..	...	1	...	1	...	...	...	...
Potato Crisps ... ..	...	1	...	1	...	1	...	1
Pudding (Christmas), etc. ... ..	...	27	...	27	...	4	...	4
Pudding Mixture, Sweetened and Unsweetened ... ..	...	7	...	7	...	...	...	...
Puff Pastry, Uncooked (Frozen) ... ..	...	1	...	1	...	...	...	...
Rice ... ..	...	1	...	1	...	...	...	...
Rice, Ground ... ..	...	2	...	2	...	...	...	...
Rose Hip Syrup ... ..	...	4	...	4	...	2	...	2
Rum ... ..	9	...	...	9	...	...	...	...
Saccharin Tablets ... ..	...	7	...	7	...	1	...	1
Sago ... ..	...	10	...	10	...	3	...	3
Salad Cream ... ..	...	19	...	19	...	...	...	...
Salad Oil ... ..	...	1	...	1	...	...	...	...
Salmon Mayonnaise, Potted ... ..	...	1	...	1	...	...	...	...
Salmon with Potato Salad, Canned ... ..	...	1	...	1	...	...	...	...
Salt ... ..	...	7	...	7	...	...	...	...
Sauce ... ..	...	40	...	40	...	...	...	...



Table 3.—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Sausages, Beef ...	...	30	...	30	...	7	...	7
Sausages, Pork ...	...	40	1	41	...	14	...	14
Sausages, Canned (includes one Vienna) ...	...	4	...	4	...	1	...	1
Sausages, Cumber- land (includes one Canned) ...	...	2	...	2	...	...	...	...
Sausages, Frankfurt ...	...	1	...	1	...	...	...	...
Sausages, Liver ...	...	5	...	5	...	...	...	...
Sausages, Ulster Fry ...	...	1	...	1	...	...	...	...
Sausages, Worst ...	...	1	...	1	...	...	...	...
Sausage Meat, Pork ...	...	1	...	1	...	1	...	1
Seidlitz Powders ...	...	11	...	11	...	2	...	2
Seidlitz Powders, Double Strength ...	...	2	...	2	...	...	...	...
Seidlitz Powders, Extra Strong ...	...	3	...	3	...	3	...	3
Semolina ...	...	15	...	15	...	...	...	...
Shrimps (Potted and Canned) ...	...	2	...	2	...	...	...	...
Soda Mint Tablets...	...	1	...	1	...	...	...	...
Sodium Bicarbonate ...	1	26	...	27	1	1	...	2
Soft Drinks—to be diluted ...	...	9	...	9	...	1	...	1
Soft Drinks, Mineral Waters ...	...	13	...	13	...	2	...	2
Soft Drinks, Orange Drinks ...	...	15	...	15	...	3	...	3
Soft Drinks, Morning Fruit Drink ...	...	1	...	1	...	1	...	1
Soft Drinks, Glucose Drinks ...	...	5	...	5	...	1	...	1

Table 3.—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Soft Drinks, Non-alcoholic beverage ...	...	1	...	1	...	...	...	...
Soft Drink Powder ...	...	3	...	3	...	...	...	...
Soup, Canned ...	...	28	...	28	...	...	...	...
Soup Mixture (Dried Vegetables, etc.) ...	...	4	...	4	...	1	...	1
Soup Cubes ...	...	1	...	1	...	...	...	...
Soup Powder ...	...	3	...	3	...	...	...	...
Spice, Mixed, Ground ...	...	8	...	8	...	...	...	...
Spice, Pickling ...	...	1	...	1	...	...	...	...
Sponge Cake and Sponge Pudding Mixture, Sweetened ...	...	10	...	10	...	...	...	...
Stomach Powder ...	...	1	...	1	...	...	...	...
Suet, Shredded ...	...	21	...	21	...	1	...	1
Sugar ...	...	39	1	40	...	...	...	...
Sugar, Icing (includes one Flavoured) ...	...	11	...	11	...	1	...	1
Sulphur Tablets ...	...	1	...	1	...	...	...	...
Sweets (including Chocolates and sweets containing Butter) ...	...	48	...	48	...	3	...	3
Sweetmeat ...	...	2	...	2	...	2	...	2
Syrup ...	...	10	...	10	...	1	...	1
Tapioca ...	...	24	...	24	...	...	...	...
Tartaric Acid ...	...	1	...	1	...	...	...	...
Tea ...	...	53	...	53	...	...	...	...
Teething Powders ...	...	6	...	6	...	...	...	...



Table 3.—continued.

Samples.	Number Examined.				Number adulterated or otherwise giving rise to irregularity.			
	Formal.	Informal.	Private.	Total.	Formal.	Informal.	Private.	Total.
Throat Lozenges ...	...	2	...	2	...	...	...	...
Tomatoes, Canned...	...	1	...	1	...	...	...	...
Tomato Juice Cocktail (Bottled) ...	...	1	...	1	...	...	...	...
Tonic Tablets ...	...	1	...	1	...	...	...	...
Travel Sickness Tablets ...	...	2	...	2	...	...	...	...
Treacle and Molasses ...	...	10	...	10	...	1	...	1
Turkey, Minced, Bottled ...	...	1	...	1	...	...	...	...
Vegetables, Dehydrated ...	...	2	...	2	...	...	...	...
Vegetables, Dried (Peas, etc.) ...	...	17	...	17	...	...	...	...
Vegetables, Frozen ...	...	5	...	5	...	...	...	...
Vinegar ...	...	17	...	17	...	2	...	2
Vitamin Capsules and Tablets ...	...	23	...	23	...	1	...	1
Vitaminised Lozenges ...	...	2	...	2	...	2	...	2
Vitamin A, C and D Emulsion ...	...	1	...	1	...	...	...	...
Welsh Rarebit ...	...	1	...	1	...	...	...	...
Whisky ...	34	...	...	34	...	...	...	...
Wine (British Sherry, British Ruby, etc.) ...	...	7	...	7	...	...	...	...
Wine, Non- alcoholic ...	...	1	...	1	...	1	...	1
Yeast Extract ...	...	1	...	1	...	...	...	...
Yeast Tablets ...	...	2	...	2	...	...	...	...
Zinc Ointment ...	...	11	...	11	...	...	...	...
Totals ...	3,331	4,589	319	8,239	101	230	18	349

### *The Number of Commodities.*

The variety of commodities on sale is now very large, and this is reflected in the number of different articles of which samples have been taken and submitted for analysis. Two hundred and fifty-two different commodities consisting of food and drugs were examined during the year.

In order to obtain adequate sampling of the common articles of food it is the practice to issue quarterly lists of samples which assist the sampling officers to correlate their samples one with another and at the same time ensure that each area is satisfactorily sampled in respect of any particular commodity. Due to the desirability of allowing considerable latitude in the sampling of other articles where this may be indicated in the public interest, the variety of samples actually examined is considerably increased by the inclusion of commodities in less common demand.

### *Total Adulteration.*

During the year under review, 8,239 samples of food and drugs were submitted for examination under the Act, and of these 349 were reported upon adversely; the total adulteration was, therefore, 4.2 per cent. This represents a slight increase compared with the percentage of adulteration for the previous year (1956) when the figure was 4.1 per cent.

In table 4 the percentages of adulteration are given for the past 10 years. It will be seen that during this period the lowest figure is 4.1 which was reached during the year 1956 and that the average figure is 4.8 per cent. The percentage of adulteration for the year 1957 is the second lowest figure since the year 1939. In general, the adulteration during and subsequent to the war is considerably greater than that found in preceding years and the figure for the year under review represents the second occasion, since the war, that the adulteration rate has come within the range of that for the 10 years 1929–1938, which immediately preceded the war, when the percentage adulteration varied from 2.6 to 4.2.

Table 4.

*Percentage of Adulteration of County Samples of Food and Drugs,  
1948-1957.*

Year.			Total No. of Samples.	No. of Adulterated Samples.	Percentage of Adulteration.
1948	...	...	6,958	399	5.7
1949	...	...	7,700	408	5.3
1950	...	...	8,104	363	4.5
1951	...	...	8,501	412	4.8
1952	...	...	8,622	404	4.7
1953	...	...	8,635	386	4.5
1954	...	...	8,089	417	5.1
1955	...	...	8,373	413	4.9
1956	...	...	8,215	340	4.1
1957	...	...	8,239	349	4.2
1948-1957	...		81,436	3,891	4.8

*Analysis of County Food and Drugs Samples.*

The point raised in the preceding paragraph is perhaps brought out more clearly in table 5 where the percentage of adulteration over the last 10 years is given side by side with the various types of samples and with the number of samples taken per 100,000 of the population. During the war years the rate of sampling dropped very considerably, in fact for the years 1942-1945 inclusive it was less than half that for the years immediately prior to the war. The total number of samples and the number of samples per 100,000 of the population for the year under review have been well maintained at the level reached during the year 1947 (6,819) and the figures for the last 10 years are much higher than the corresponding figures for any of the previous years in the history of the County Laboratory.



*Table 5.*

Year.	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
Percentage of Adulteration .. ..	5.7	5.3	4.5	4.8	4.7	4.5	5.1	4.9	4.1	4.2
Total Samples ..	6,958	7,700	8,104	8,501	8,622	8,635	8,089	8,373	8,215	8,239
Formal Samples ..	2,478	3,011	2,798	2,751	2,654	3,220	2,817	3,300	3,474	3,331
Informal Samples ..	3,953	4,254	4,858	5,184	5,313	4,761	4,844	4,744	4,404	4,589
Private Samples ..	527	435	448	566	655	654	428	329	337	319
Number of Samples per 100,000 of the population .. ..	504	546	566	589	599	598	593	613	594	588

*Total Adulteration : the County compared with other Areas.*

Table 6 gives the percentage of adulteration for the year 1957 for certain other Food and Drugs Authorities whose figures were available at the time of writing. I am indebted to the Public Analysts of the various districts for the information included in this table and also for the figures included in tables 14 and 19. It will be seen that the figure for the County of Lancaster, *viz.*, 4.2 per cent. is lower than the average (4.6 per cent.) for the Authorities mentioned. The range of adulteration for the areas included in the table varied from 7.6 to 2.0 per cent.

*Table 6.*  
*Total Adulteration, 1957. Various Districts.*

Area.	No. of Samples.	Per cent. of Adult.	Area.	No. of Samples.	Per cent. of Adult.
Durham, County ...	2,418	2.9	Birmingham ...	5,580	6.5
Kent, County ...	4,676	7.4	Bristol ... ..	4,868	2.0
Somersetshire, County ...	3,360	4.1	Leeds ... ..	3,281	3.7
Staffordshire, County ...	5,504	2.8	Leicester ... ..	2,794	5.7
Surrey, County ...	908	4.3	Liverpool ... ..	4,112	4.1
Worcestershire, County ...	5,824	7.6	Manchester ...	2,554	4.6

*Total Adulteration : England and Wales.*

It is interesting to compare the position as regards adulteration in Lancashire, which is 4.2 per cent., with the corresponding figures for the years between the wars for the whole of England and Wales. In table 7 there are given the figures for a long period, 34 years, omitting the years of

both wars. It will be seen that the total adulteration in Lancashire for the year under review is less than the average (6·6 per cent.) for England and Wales for the years between the wars. This is the tenth occasion since the year 1940 that the adulteration rate for the County has fallen below the average for that of England and Wales for all the years shown in the table, the first occasion being the year 1948, when the total adulteration rate was 5·7 per cent.

*Table 7.*

*Percentage of Adulteration for England and Wales, 1900–1938.*

YEAR.	MILK.			TOTAL SAMPLES.		
	Number examined.	Number adulterated.	Per-centage of Adult.	Number examined.	Number adulterated.	Per-centage of Adult.
*1900–1913...	569,916	62,318	10·9	1,250,686	105,076	8·4
1919 ... ..	57,361	6,374	11·1	101,140	8,313	8·2
1920 ... ..	62,463	5,797	9·3	111,797	7,903	7·1
1921 ... ..	61,439	5,290	8·6	113,664	7,582	6·7
1922 ... ..	60,274	4,624	7·7	113,860	7,106	6·2
1923 ... ..	59,925	4,684	7·8	114,846	6,980	6·1
1924 ... ..	62,133	4,773	7·7	118,000	6,987	5·9
1925 ... ..	61,909	5,163	8·3	118,930	7,714	6·5
1926 ... ..	62,507	4,625	7·4	120,617	7,044	5·8
1927 ... ..	63,687	4,398	6·9	124,264	6,787	5·5
1928 ... ..	67,350	5,542	8·2	129,034	7,524	5·8
1929 ... ..	68,115	5,293	7·8	133,584	7,260	5·4
1930 ... ..	69,311	4,581	6·6	136,515	6,496	4·8
1931 ... ..	70,201	4,507	6·4	136,169	6,324	4·6
1932 ... ..	72,940	5,307	7·3	137,981	7,019	5·1
1933 ... ..	74,545	5,760	7·7	138,171	7,601	5·5
1934 ... ..	76,930	5,506	7·2	140,583	7,451	5·3
1935 ... ..	78,674	5,798	7·4	143,831	7,972	5·5
1936 ... ..	80,082	5,706	7·1	146,438	7,802	5·3
1937 ... ..	82,357	6,107	7·4	151,370	8,401	5·5
1938 ... ..	80,025	6,141	7·7	149,073	8,433	5·7
Totals ...	1,942,144	168,294	8·7	3,830,553	253,775	6·6

\* Figures for 1914–1918 and 1939–1957 inclusive, available.

*Adulteration in County Districts, etc.*

There are 92 Districts shown in the Area of the County Food and Drugs authority for the year under review.

Table 8 shows the number of samples taken and the number of adulterated samples in each of the 92 districts together with those relating to 10 autonomous areas. An examination of the table will show that adulteration was nil in 18 of the County Districts as against nil in 17 districts for the year 1956. None of the autonomous areas showed a total freedom from adulteration.

*Table 8.*

*Adulteration in the County Districts and in the areas of 10 Autonomous Food and Drugs Authorities during the year 1957.*

District.	Milk.		Other Articles.		Total.	
	Samp-les.	Adult.	Samp-les.	Adult.	Samp-les.	Adult.
Abram U.D.C. ...	18	0	15	0	33	0
Adlington U.D.C. ...	25	1	28	2	53	3
Ashton-in-Makerfield U.D.C....	49	0	43	1	92	1
Aspull U.D.C. ...	15	0	14	0	29	0
Atherton U.D.C. ...	65	2	37	4	102	6
Audenshaw U.D.C. ...	38	0	24	0	62	0
Bacup Borough ...	93	2	24	1	117	3
Barrowford U.D.C. ...	19	1	6	0	25	1
Billinge and Winstanley U.D.C. ...	21	1	9	0	30	1
Blackburn R.D.C. ...	51	1	19	0	70	1
Blackrod U.D.C. ...	5	0	0	0	5	0
Brierfield U.D.C. ...	28	1	9	1	37	2
Burnley R.D.C. ...	50	3	28	2	78	5
Carnforth U.D.C. ...	15	0	17	1	32	1
Chadderton U.D.C. ...	90	3	80	9	170	12
Chorley R.D.C. ...	115	5	35	3	150	8
Church U.D.C. ...	20	2	10	0	30	2



Table 8—continued.

District.	Milk.		Other Articles.		Total.	
	Samp-les.	Adult.	Samp-les.	Adult.	Samp-les.	Adult.
Clayton-le-Moors U.D.C.	21	1	14	0	35	1
Clitheroe Borough ...	42	4	17	1	59	5
Clitheroe R.D.C. ...	35	0	14	2	49	2
Crompton U.D.C. ...	45	1	22	4	67	5
Dalton-in-Furness U.D.C.... ...	28	4	26	2	54	6
Denton U.D.C. ...	75	0	57	3	132	3
Droylsden U.D.C. ...	101	1	32	7	133	8
Failsworth U.D.C. ...	58	0	42	3	100	3
Farnworth Borough ...	75	0	57	5	132	5
Fleetwood Borough ...	73	0	76	5	149	5
Formby U.D.C. ...	41	0	15	0	56	0
Fulwood U.D.C. ...	27	0	43	1	70	1
Fylde R.D.C. ...	63	7	25	2	88	9
Garstang R.D.C. ...	86	9	39	4	125	13
Golborne U.D.C. ...	62	1	30	1	92	2
Grange U.D.C. ...	15	0	13	1	28	1
Great Harwood U.D.C.	37	1	19	0	56	1
Haslingden Borough ...	51	2	19	1	70	3
Haydock U.D.C. ...	28	0	31	2	59	2
Heywood Borough ...	87	3	54	5	141	8
Hindley U.D.C. ...	43	0	42	2	85	2
Horwich U.D.C. ...	50	3	42	1	92	4
Ince-in-Makerfield U.D.C.... ...	37	0	57	3	94	3
Irlam U.D.C. ...	46	0	30	3	76	3
Kearsley U.D.C. ...	30	0	20	0	50	0
Kirkham U.D.C. ...	28	0	12	0	40	0
Lancaster R.D.C. ...	64	8	26	2	90	10
Lees U.D.C. ...	26	0	8	0	34	0

Table 8—continued.

District.	Milk.		Other Articles.		Total.:	
	Samp-les.	Adult.	Samp-les.	Adult.	Samp-les.	Adult.
Leyland U.D.C. ...	44	3	45	4	89	7
Litherland U.D.C. ...	118	2	21	0	139	2
Little Lever U.D.C. ...	14	0	11	1	25	1
Littleborough U.D.C. ...	29	1	28	4	57	5
Longridge U.D.C. ...	16	0	9	2	25	2
Lunesdale R.D.C. ...	50	1	30	0	80	1
Lytham St. Annes, Borough ...	93	3	55	2	148	5
Milnrow U.D.C. ...	35	1	17	0	52	1
Mossley Borough ...	31	1	21	1	52	2
Nelson Borough... ..	117	4	48	2	165	6
Ormskirk U.D.C. ...	42	0	70	1	112	1
Orrell U.D.C. ... ..	25	1	25	1	50	2
Oswaldtwistle U.D.C. ...	79	1	11	0	90	1
Padiham U.D.C. ...	28	0	22	1	50	1
Poulton-le-Fylde U.D.C.	34	2	7	0	41	2
Preesall U.D.C. ... ..	13	0	4	0	17	0
Prescot U.D.C. ...	46	0	19	0	65	0
Preston R.D.C. ... ..	135	3	92	4	227	7
Prestwich Borough ...	130	5	60	5	190	10
Radcliffe Borough ...	71	2	80	7	151	9
Rainford U.D.C. ...	10	0	15	0	25	0
Ramsbottom U.D.C. ...	38	1	36	2	74	3
Rawtenstall Borough ...	79	1	46	4	125	5
Rishton U.D.C. ...	26	1	9	0	35	1
Royton U.D.C. ...	60	0	16	0	76	0
Skelmersdale U.D.C. ...	19	0	16	1	35	1
Standish-with- Langtree U.D.C. ...	27	1	8	0	35	1

Table 8—continued.

District.	Milk.		Other Articles.		Total..	
	Samp-les.	Adult.	Samp-les.	Adult.	Samp-les.	Adult.
Thornton Cleveleys U.D.C.... ...	62	5	20	0	82	5
Tottington U.D.C. ...	37	0	10	0	47	0
Trawden U.D.C. ...	10	0	0	0	10	0
Turton U.D.C. ...	43	3	26	1	69	4
Tyldesley U.D.C. ...	45	1	45	2	90	3
Ulverston R.D.C. ...	137	8	28	2	165	10
Ulverston U.D.C. ...	38	5	36	2	74	7
Up Holland U.D.C. ...	10	0	15	0	25	0
Urmston U.D.C. ...	123	1	86	8	209	9
Walton-le-Dale U.D.C.	66	1	36	3	102	4
Wardle U.D.C. ...	20	0	12	0	32	0
Warrington R.D.C. ...	106	1	58	1	164	2
West Lancashire R.D.C.	185	10	85	2	270	12
Westhoughton U.D.C. ...	63	0	21	1	84	1
Whiston R.D.C.... ...	169	3	97	3	266	6
Whitefield U.D.C. ...	32	0	39	2	71	2
Whitworth U.D.C. ...	31	0	17	2	48	2
Wigan R.D.C. ...	54	0	14	0	68	0
Withnell U.D.C. ...	13	0	3	0	16	0
Worsley U.D.C. ...	82	1	79	4	161	5
Miscellaneous ...	585	50	0	0	585	50
Total County Districts	5411	190	2828	159	8239	349
Ten Autonomous Food and Drugs Authorities	1176	49	831	54	2007	103
Total—All Sources ...	6587	239	3659	213	10246	452



*Adulteration of Milk in the County.*

The number of milks submitted under the Food and Drugs Act during the year was 5,411, and of these 190 were reported against ; the amount of adulteration was, therefore, 3·5 per cent. This figure, as will be seen from table 9, is considerably lower than the average for the last 10 years and is the lowest shown in the table.

*Table 9.*

*Percentage of Adulteration of Milk Samples, 1948–1957.*

Year.			No. of Samples.	No. of Adulterated Samples.	Percentage of Adulteration.
1948	...	...	4,464	293	6·6
1949	...	...	5,157	301	5·8
1950	...	...	5,324	285	5·3
1951	...	...	5,811	291	5·0
1952	...	...	5,804	298	5·1
1953	...	...	5,872	281	4·8
1954	...	...	5,115	287	5·6
1955	...	...	5,637	273	4·8
1956	...	...	5,497	203	3·7
1957	...	...	5,411	190	3·5
Totals ...			54,092	2,702	4·9

*The Adulteration of Milk in the County for each month of the year.*

In table 10 will be found the figures for the number of milk samples submitted by County Sampling Officers during each month of the year together with the number adulterated and the percentage adulteration. In general the percentage adulteration usually increases during late winter and decreases in the autumn. The increasing adulteration of milk noted during the winter and first half of the year may be due to two factors : (a) the poorer quality of milk towards the end of the winter enables cases of slight adulteration to be detected more readily and, (b) the scarcity of milk in the winter may, in some instances, be an incentive to adulteration.

Table 10.

*Milk.—Monthly Adulteration, 1957.*

Month.	Number of Samples.	Number Adulterated.	Percentage of Adulteration.
January ... ..	520	14	2·7
February... ..	447	22	4·9
March ... ..	408	15	3·7
April ... ..	443	29	6·5
May ... ..	511	30	5·9
June ... ..	323	15	4·6
July ... ..	469	14	2·9
August ... ..	386	10	2·6
September ... ..	443	18	4·1
October ... ..	607	8	1·3
November ... ..	497	9	1·8
December ... ..	357	6	1·7
Total ... ..	5,411	190	3·5

In the following table will be found particulars of the various types of adulteration and the number of samples under each heading :—

Table 11.

			<i>Per cent.</i>
Milks deficient in fat only ... ..	115	or	2·12
Milks containing added water only ... ..	59	or	1·09
Milks deficient in fat and containing added water ... ..	11	or	0·20
Milks containing foreign matter, etc. ... ..	5	or	0·09
Milks containing preservatives ... ..	Nil	or	Nil
Milks containing colouring matter ... ..	Nil	or	Nil
	<u>190</u>	<u>or</u>	<u>3·50</u>
Milks containing more than 3 per cent. added water ... ..	19	or	0·35
Milks 10 per cent. or more deficient in fat ... ..	42	or	0·77

Alternatively the milk adulteration can be expressed in terms of the adulteration of the various grades of milk as shown in the following table.

*Table 12.*

Grade of Milk.	Number of Samples.	Number Adulterated.	Percentage of Adulteration.
Pasteurised ... ..	1,340	12	0.89
Tuberculin Tested (Pasteurised) ... ..	978	8	0.81
Sterilised ... ..	467	4	0.85
Tuberculin Tested ... ..	162	7	4.32
Raw undesignated ... ..	2,464	159	6.45
*Channel Islands (all grades) ... ..	184	5	2.72

\* The figures for Channel Islands Milks are included here for completeness but for all other purposes in this report they are considered separately as they come under Regulations of their own, see page 38.

It will be noted from table 12 that all the heat treated milks show a lower rate of adulteration than the types of raw milk. This is primarily because heat treated milks are normally bulked before processing and irregularities in individual churns or consignments may thereby be obscured. As against this the relatively high adulteration rates for raw undesignated milks is weighted by the selective sampling of a number of milks, taken on delivery to processing dairies, which were the subject of complaint by the dairy managements.

#### *“ Serious ” and “ Less Serious ” Adulteration.*

At first sight it may seem unjustifiable to speak of “ serious ” and “ less serious ” aspects of adulteration, for any adulteration of such an indispensable article of the diet as milk, must be regarded as serious. The figures, therefore, given in table 11 for adulteration include all samples which were found to be deficient in fat or which contained added water, irrespective of whether the deficiency or the added water was small, or great enough to justify a prosecution.



It has been the practice for some years now in these Reports, however, to attempt to distinguish between "serious" and "less serious" adulteration and since a useful purpose appears to be served by this classification it is continued this year. The general principle is to include under the term "serious," samples so grossly adulterated as to justify the institution of legal proceedings on analytical grounds and to class the rest, still adulterated, but not to so great an extent, under the term "less serious."

A study of table 11 reveals that 1.12 per cent. or less than one-third of the total milk adulteration may be considered "serious." This figure includes 19 samples which contained added water and 42 samples which were deficient in fat. A number of these seriously adulterated samples were taken informally and could not, therefore, be the subject of prosecutions. In several other instances corresponding appeal-to-cow samples of poor quality were submitted by the Sampling Officers. Prosecutions were recommended, however, in respect of 12 samples.

It will be noted that in addition to samples deficient in fat or containing water, there are five samples in table 11 which contained foreign matter, etc. Of these, one contained material of the nature of cement mortar, one contained 29 parts by volume of moist dirt of the nature of dung per 100,000 parts by volume of the sample, two contained particles of broken glass and one was of abnormal composition and contained pus cells, probably due to a pathological condition of the udder. The vendor of the sample that contained cement mortar adhering to the inside lip of the bottle was cautioned. The farmer who supplied the sample containing moist dirt of the nature of dung was cautioned and the Milk Production Officer notified. The producer of one of the samples of milk, supplied to a school, and which contained particles of broken glass was interviewed and cautioned and the analytical results of the sample of abnormal composition were referred to the Milk Production Officer. With regard to the remaining sample, which contained particles of broken glass and which was supplied to a school, a prosecution under Section 2 of the Food and Drugs Act, 1955, was instituted against the vendor who was fined £50 and £5 5s. costs.

In table 13 are given details in regard to the adulterated milk samples, submitted by County Sampling Officers, which were the subject of legal proceedings, together with the results of the prosecutions.

Table 13.

*Milk Prosecutions, 1957.*

Number of Sample.	Nature of Adulteration or Irregularity.	Observations.
N.6942	Deficient 26·6 per cent. fat      ...      ...	Section 2 Food and Drugs Act, 1955. Fined £5 and £4 18s. costs.
E.9270	Deficient 8·3 per cent. fat and 5·5 per cent. solids-not-fat; freezing point indicated 8·5 per cent. extraneous water	Same vendor. Prosecution not proceeded with in view of illness of the Defendant.
E.9272	Deficient 12·6 per cent. fat and 6·8 per cent. solids-not-fat; freezing point indicated 10·3 per cent. extraneous water	
C.8236	Contained particles of broken glass weighing in all 0·107 gramme.	Section 2 Food and Drugs Act, 1955. Fined £50 and £5 5s. costs.
N.7934	Deficient 2·0 per cent. solids-not-fat; freezing point indicated 5·3 per cent. extraneous water	Same vendor. Section 32 (3) Food and Drugs Act, 1955. Fined £8 and £2 costs.
N.7935	Deficient 6·6 per cent. fat and 6·1 per cent. solids-not-fat; freezing point indicated 6·8 per cent. extraneous water	
N.7936	Deficient 13·0 per cent. solids-not-fat; freezing point indicated 13·5 per cent. extraneous water	
N.7937	Deficient 2·5 per cent. solids-not-fat; freezing point indicated 4·3 per cent. extraneous water	
N.8131	Deficient 18·3 per cent. fat      ...      ...	Same vendor. Section 2 Food and Drugs Act, 1955. Fined £2 and £5 19s. costs in respect of N.8131.
N.8137	Deficient 3·3 per cent. fat      ...      ...	
C.8701	Deficient 60 per cent. fat      ...      ...	Same vendor. Section 2 Food and Drugs Act, 1955. Fined £15 and £10 10s. costs.
C.8702	Deficient 58·3 per cent. fat      ...      ...	
C.8703	Deficient 58·3 per cent. fat      ...      ...	



*Adulteration of Milk : the County compared with Other Areas.*

In the following table the percentage of milk adulteration for the year 1957 is given for a number of districts in England whose figures were available at the time of writing. The corresponding figure for the County of Lancaster was 3·5 per cent., as against 3·7 per cent. in the year 1956 and 4·8 per cent. in the year 1955. The percentage of milk adulteration in the County for the year under review is lower than the average (4·7 per cent.) for the areas included in the table. The rate of adulteration in these districts varied from 10·4 to 1·7 per cent.

*Table 14.*

*Milk Adulteration, 1957. Various Districts.*

Area.	Number of Samples.	Per cent. of Adult.	Area.	Number of Samples.	Per cent. of Adult.
Durham, County ...	1,128	2·5	Birmingham ...	2,877	10·4
Kent, County...	1,546	3·0	Bristol ...	1,316	6·0
Somersetshire, County ...	2,041	4·4	Leeds ...	2,922	2·9
Staffordshire, County ...	4,287	2·1	Leicester ...	1,781	5·5
Surrey, County ...	655	1·7	Liverpool ...	3,157	2·6
Worcestershire, County ...	4,897	8·0	Manchester ...	1,156	7·4

*Adulteration of Milk : England and Wales.*

In table 15 there are set out the percentages of milk adulteration for the whole of England and Wales for a long period, 34 years, omitting the years of both wars, which are, unfortunately, not available. It will be seen that the figure for milk adulteration in the County, *i.e.*, 3·5 per cent. is lower than the average for the whole of England and Wales for the 34 years mentioned. In fact, in none of the years included in the table was the milk adulteration for England and Wales lower than that of the County for the year under review. Furthermore, this is the tenth time since the year 1940 that the figure for milk adulteration has fallen below the average for England and Wales for the years included in the table, the first time being in the year 1948 when the milk adulteration was 6·6 per cent.



*Table 15.*  
*Percentage of Milk Adulteration for England and Wales,*  
*1900-1938.*

Year.			Number Examined.	Number Adulterated.	Percentage of Adulteration.
*1900-1913	...	...	569,916	62,318	10.9
1919	...	...	57,361	6,374	11.1
1920	...	...	62,463	5,797	9.3
1921	...	...	61,439	5,290	8.6
1922	...	...	60,274	4,624	7.7
1923	...	...	59,925	4,684	7.8
1924	...	...	62,133	4,773	7.7
1925	...	...	61,909	5,163	8.3
1926	...	...	62,507	4,625	7.4
1927	...	...	63,687	4,398	6.9
1928	...	...	67,350	5,542	8.2
1929	...	...	68,115	5,293	7.8
1930	...	...	69,311	4,581	6.6
1931	...	...	70,201	4,507	6.4
1932	...	...	72,940	5,307	7.3
1933	...	...	74,545	5,760	7.7
1934	...	...	76,920	5,506	7.2
1935	...	...	78,674	5,798	7.4
1936	...	...	80,082	5,706	7.1
1937	...	...	82,357	6,107	7.4
1938	...	...	80,025	6,141	7.7
Totals	...	...	1,942,144	168,294	8.7

\* Figures for 1914-1918 and 1939-1957 inclusive, not available.

#### *General.*

#### MILK.

As in previous years the greater proportion of the samples submitted during the year consisted of milk ; the number of samples of milk was 5,411 out of a total number of samples submitted of 8,239.

The first impression created may be that the number of samples of milk seems unduly high as compared with the number of other samples. Taking into account, however, the fact that every day's production

represents a separate consignment probably delivered in bottles or churns any one of which might be adulterated and the others genuine, also the perishable nature of the commodity and the importance attached to milk as a food particularly for children, mothers and invalids, it is essential that adequate steps should be taken to ensure an unadulterated supply.

Such circumstances as these have led to the conclusion that, for the detection of adulteration and in order to safeguard the quality of daily supplies, it is advisable to take a relatively large proportion of samples of milk. In a memorandum issued by the Clerk of the Lancashire County Council, it is suggested that out of each 100 samples of food and drugs taken, about 60 should consist of milk.

### *The Standards of Quality for Milk.*

In some countries there is a definite standard of quality required for liquid milk sold to the public ; it is then illegal to sell milk which is below that standard. In this country the law is less stringent. The present Food and Drugs Act contains no standards for milk. The position remains very much as it was before this Act came into operation, in that the one requirement laid down by law is that milk must be sold to each purchaser in the condition in which it came from the cow. If it attains a certain limit or exceeds it, it is to be regarded as above suspicion, and if it is below that limit it only becomes suspect, and it falls to the lot of the person who sold it to establish, if he can, before the Court that nothing has been added to it, or no ingredient abstracted from it.

In furtherance of the principle outlined in the preceding paragraph, presumptive limits for the composition of milk were established after exhaustive enquiries by a Government Committee appointed by the Board of Agriculture in 1900.

The outcome of the deliberations of this Committee was the production of the Sale of Milk Regulations, 1901, which were modified as regards skimmed milk in 1912. These Regulations were reproduced, in effect unaltered, in October 1939, in the Sale of Milk Regulations, 1939, made by the then Ministry of Agriculture and Fisheries. They are as follows :—

(1) Where a sample of milk (not being milk sold as separated, or condensed, milk) contains less than 3 per cent. of milk-fat, it shall be presumed for the purposes of the Food and Drugs Act, 1938, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-fat, or the addition thereto of water.

(2) Where a sample of milk (not being milk sold as separated, or condensed, milk) contains less than 8·5 per cent of milk-solids other than milk-fat, it shall be presumed for the purposes of the



Food and Drugs Act, 1938, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

(3) Where a sample of separated milk (not being condensed milk) contains less than 8·7 per cent. of milk-solids other than milk-fat, it shall be presumed for the purposes of the Food and Drugs Act, 1938, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

It will be seen from the above Regulations that no definite standard for milk is set up by them. They say, in effect, that a suspicion that adulteration may have been practised is to be entertained if either the fat falls below 3·0 per cent. or the non-fatty solids below 8·5 per cent. The very fact that failure to attain the limits only raises a presumption that milk is adulterated, means that it is admitted that a sample of milk may be genuine, that is, not tampered with in any way, although it does not reach the figure for fat or solids-not-fat or both.

That is one side of the picture, a milk may be genuine so far as the law is concerned, and yet contain less than 3·0 per cent. of fat and 8·5 per cent. of solids-not-fat. Many milks, in fact most milks, however, have a composition well above 3·0 per cent. of fat. For instance, the average fat content of all the milks analysed in the County during the year was 3·68 per cent. Similarly the solids-not-fat are usually above 8·5 per cent., the average for the year being 8·63 per cent. The solids-not-fat may be considerably higher than the average figure just mentioned and an appreciable amount of water could then be added without bringing the solids-not-fat below the presumptive limit. For example, if a milk contained 9·3 per cent. of solids-not-fat it would be possible to add about 8·6 per cent. of water without the milk falling below the limit of the Sale of Milk Regulations. This possibility has been anticipated and provided for by Section 32 of the Food and Drugs Act, 1955, which re-enacts Section 24 of the 1938 Act, under which it is an offence to add water to milk (irrespective of the composition of the resulting mixture). The Hortvet Freezing Point Test enables the analyst to detect the presence and determine the amount of extraneous water in milk even in cases where the solids-not-fat have not been reduced below 8·5 per cent.

#### *Channel Islands Milk and South Devon Milk.*

In addition to the above standards of quality, which are applicable to all milk, a special standard for milk-fat content of not less than four per cent. was prescribed in the Milk (Great Britain) Order, 1954, for "Channel Islands Milk" and for "South Devon Milk." The enforcement of this standard was the responsibility of the Ministry of Agriculture, Fisheries and Food but during the year under review the Milk and



Dairies (Channel Islands and South Devon Milk) Regulations were made. These came into operation on the 1st July, 1956, and made food and drugs authorities responsible for enforcing the standard. "Channel Islands Milk" and "South Devon Milk" are defined by the Milk (Great Britain) Order, 1954, as amended, as being milk (a) which is produced from cows of the Channel Islands or South Devon Breeds and (b) which is labelled "Channel Islands Milk," "Jersey Milk," "Guernsey Milk" or "South Devon Milk" when sold in a container. This last Order also prescribes maximum prices for Channel Islands and South Devon Milk. The enforcement of the maximum price is still the responsibility of the Ministry of Agriculture, Fisheries and Food and Food and Drugs authorities are, therefore, requested to report to the Ministry details of any samples of Channel Islands and South Devon Milk sold at the higher price prescribed which are found to contain less than four per cent. of fat. This is, of course in addition to any enforcement action in regard to fat deficiency which the Food and Drugs authority may, itself, decide to take. During the year, 1957, 216 samples of Channel Islands Milk were examined (184 were submitted by County Sampling Officers and 32 by Autonomous Authorities). They were found upon analysis to have an average butter-fat content of 4.85 per cent., and an average solids-not-fat content of 9.04 per cent. Of the 216 samples examined 211 were satisfactory. Of the five unsatisfactory samples (all County) No's C.7577, N.7313, N.7421 and E.9378 were found to have butter-fat contents of only 3.35, 3.95, 3.90 and 3.55 per cent. respectively. Follow up samples were taken in each case and were found to be genuine. With regard to the remaining sample No. S. 9585, which had a butter-fat content of only 3.15 per cent., legal proceedings were instituted against the vendor but at the court hearing the summons was dismissed although the analytical findings were not questioned. The details of this case were brought to the notice of the Ministry of Agriculture, Fisheries and Food.

#### *The Average Composition of Milk during the Year.*

Genuine milk has not always the same composition. There are natural variations in the amounts of both fat and solids-not-fat in milk as drawn from the cow. It, therefore, becomes a matter not only of interest but also of importance and significance, to know the average values for these two constituents. This information is given for the year 1957 in table 16, where it will be seen that the average figures for fat are 3.68 per cent., for solids-not-fat 8.63 per cent. and for total solids 12.31 per cent.

It should be pointed out that the average compositions and frequencies included in this section of the Report are calculated from the results of all the samples of milk (other than Channel Islands milk) received; that is to say, there are included all adulterated samples and

further, all appeal-to-cow samples, whether they were above or below the limits for fat and solids-not-fat laid down by the Sale of Milk Regulations. The figures for average composition calculated on this basis will, therefore, tend to be somewhat lower than those for genuine milk sold in the County.

*Table 16.*  
*Average Composition of Milk, 1957.*

Month.	Number of Samples.*	Fat per cent.	Solids-not-fat per cent.	Total Solids per cent.
January ...	1,418 { 520 449 449	3·62 { 3·65 3·62 3·58	8·53 { 8·52 8·54 8·53	12·15 { 12·17 12·16 12·11
February ...				
March ...				
April ...	1,289 { 445 516 328	3·53 { 3·55 3·55 3·49	8·62 { 8·52 8·69 8·64	12·15 { 12·07 12·24 12·13
May ...				
June ...				
July ...	1,318 { 469 386 463	3·72 { 3·66 3·68 3·80	8·66 { 8·63 8·65 8·72	12·38 { 12·29 12·33 12·52
August ...				
September ...				
October ...	1,460 { 606 497 357	3·84 { 3·90 3·83 3·78	8·69 { 8·72 8·67 8·66	12·53 { 12·62 12·50 12·44
November ...				
December ...				
Whole year ...	5,485	3·68	8·63	12·31

\* Includes Appeal-to-Cow samples but does not include three samples of Milk examined for foreign matter only.

*The Average Composition of Milk for each Month of the Year.*

Table 16 also includes the figures for the averages of fat and solids-not-fat for each month of the year. As regards fat it will be seen that June has the lowest figure, 3·49 per cent., and October the highest, 3·90 per cent. In respect of solids-not-fat, the lowest figure was obtained in January and April, 8·52 per cent., the highest in September and October, the figure then being 8·72 per cent. These variations, particularly in respect of fat content, have been the general experience for many years, the fat content usually being at its lowest in the spring and at its highest in the autumn. Solids-not-fat tend to be lower in the early months of the year.



*The Average Composition of Morning and Evening Milk during the Year.*

Usually, when samples are submitted, the information is given whether they are morning or evening milks. It has, therefore, been possible to classify them so as to show the average composition of morning and evening milks separately.

When cows are milked at the usual intervals the evening milk, due to the shorter interval, is richer in fat than the morning milk, while there is little if any difference as a rule in solids-not-fat. This is illustrated in table 17 below, where the average fat for morning milk is 3.56 per cent., and the evening fat 4.03 per cent. ; the fat in the evening milk being greater by 0.47 per cent., while the averages for solids-not-fat are almost identical for the morning and evening milk.

*Table 17.*

*The Average Composition of Morning and Evening Milk during the Year.*

	Number of Samples.*	Fat per cent.	Solids-not-fat per cent.	Total solids per cent.
Morning Milk ...	1,232	3.56	8.62	12.18
Evening Milk	791	4.03	8.66	12.69
Mixed Milk ...	197	3.64	8.61	12.25
Unknown ...	3,265	3.64	8.62	12.26
Total ...	5,485	3.68	8.63	12.31

\* Includes Appeal-to-Cow samples but does not include three samples of Milk examined for foreign matter only.

*The Average Composition of Milk : compared with past years.*

In table 18 the average composition of all the milks examined is set out for the period 1910-1957. It will be seen that the average figure for fat does not vary greatly from year to year. In respect of solids-not-fat there is very little difference in the averages for the years 1910-1940. Since 1940, however, it will be noted there is an appreciable decrease in solids-not-fat, the lowest figure of 8.55 per cent. being obtained in the year 1943. The average for solids-not-fat for the year under review was 8.63 per cent. In addition to other possible causes for this decrease it should be remembered that seven of the 17 years during which the average solids-not-fat have been lower than formerly were years which showed a high rate of adulteration. Since the year 1943 there has been, in general, a tendency for solids-not-fat to show an upward trend but they are still appreciably below the pre-war figures.



*Table 18.*  
*Average Composition of Milk, 1910-1957.*

Year.	Number of Samples.	Fat per cent.	Solids-not-fat per cent.	Total Solids per cent.
1910 to 1930 ...	56,028	3.67	8.90	12.57
1931 ... ..	3,090	3.84	8.81	12.65
1932 ... ..	3,205	3.77	8.85	12.62
1933 ... ..	3,060	3.76	8.82	12.58
1934 ... ..	3,310	3.74	8.81	12.55
1935 ... ..	3,422	3.75	8.84	12.59
1936 ... ..	3,098	3.73	8.88	12.61
1937 ... ..	3,278	3.74	8.84	12.58
1938 ... ..	3,398	3.70	8.78	12.48
1939 ... ..	3,128	3.67	8.78	12.45
1940 ... ..	2,144	3.70	8.79	12.49
1941 ... ..	1,866	3.70	8.64	12.34
1942 ... ..	1,516	3.75	8.66	12.41
1943 ... ..	1,489	3.70	8.55	12.25
1944 ... ..	1,197	3.69	8.57	12.26
1945 ... ..	1,096	3.72	8.57	12.29
1946 ... ..	2,776	3.75	8.58	12.33
1947 ... ..	4,625	3.75	8.63	12.38
1948 ... ..	4,523	3.67	8.64	12.31
1949 ... ..	5,210	3.66	8.65	12.31
1950 ... ..	5,362	3.68	8.67	12.35
1951 ... ..	5,839	3.67	8.65	12.32
1952 ... ..	5,844	3.67	8.68	12.35
1953 ... ..	5,922	3.68	8.68	12.36
1954 ... ..	5,182	3.71	8.65	12.36
1955 ... ..	5,686	3.68	8.66	12.34
1956 ... ..	5,524	3.71	8.59	12.30
1957 ... ..	5,485*	3.68	8.63	12.31
1910 to 1957 ...	156,303	3.72	8.82	12.54

\* Does not include three samples of Milk examined for foreign matter only.

*Composition of Milk : the County compared with Other Areas.*

In table 19 below, figures are given for the composition of milk during the year 1957 in the areas of 12 other Food and Drugs Authorities. The corresponding figures for the County of Lancaster, based upon 5,485 samples of milk, are fat 3·68 per cent., solids-not-fat 8·63 per cent., and total solids 12·31 per cent. It will be noted that the Lancashire figures for both fat and solids not-fat are slightly below the average results for the other areas listed, *viz.*, fat 3·76 per cent. and solids-not-fat 8·74 per cent.

*Table 19.*

*Composition of Milk, 1957. Various Districts.*

Area.	Number of Samples.	Fat per cent.	Solids-not-fat per cent.	Total Solids per cent.
Durham, County ...	1,128	3·70	8·70	12·40
Somersetshire, County ...	2,057	4·04	8·89	12·93
Staffordshire, County ...	4,172	3·72	8·70	12·42
Surrey, County ...	655	4·15	8·85	13·00
Worcestershire, County	4,930	3·79	8·79	12·58
Birmingham ...	2,954	3·66	8·78	12·44
Leeds ...	2,922	3·71	8·71	12·42
Leicester ...	1,781	3·71	8·70	12·41
Liverpool ...	3,157	3·60	8·58	12·18
Manchester ...	1,156	3·60	8·75	12·35
Portsmouth ...	749	3·93	8·75	12·68
Salford ...	1,153	3·67	8·78	12·45

*The Composition of Milk : Frequencies.*

The 5,485 samples of milk examined for chemical composition during the year have been arranged in table 20 to show the number of samples having the same percentage of fat, or, in other words, the frequency with which each percentage of fat, differing by 0·1 per cent., occurred. The table has been shortened by placing in separate groups all samples containing less than 2·5 per cent. and above 3·9 per cent. This information is given for the whole year and for each month of the year.

This table gives different information than do figures for averages. It shows that, as in previous years, there are comparatively few samples below 3·0 per cent. It also shows how the figures from which the averages are calculated are distributed, information which is not obtainable from the figures for averages alone.

In this table, and the following one, table 21, all samples of milk are included, whether adulterated or not, and also all appeal-to-cow samples.

*Table 20.*  
*Composition of Milk : Frequencies.*  
FAT.

Per cent.	NUMBER OF SAMPLES.												
	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under													
2·5	0	1	8	3	9	0	1	0	1	1	5	1	30
2·5	0	2	2	0	1	2	1	0	0	0	0	1	9
2·6	0	2	2	2	1	2	1	1	0	0	0	0	11
2·7	1	0	3	1	5	2	1	1	2	1	0	1	18
2·8	2	2	4	4	5	3	0	2	4	1	0	1	28
2·9	4	6	7	6	10	8	9	2	3	1	1	1	58
3·0	12	8	14	15	14	11	4	5	11	3	3	6	106
3·1	8	16	25	15	20	17	15	4	9	2	3	3	137
3·2	11	18	14	20	25	15	14	8	14	9	17	9	174
3·3	20	20	25	29	64	40	34	16	11	14	12	9	294
3·4	45	38	55	73	101	65	46	39	17	22	15	18	534
3·5	90	111	101	100	66	58	68	70	32	25	16	29	766
3·6	155	93	77	72	54	44	72	81	57	31	38	42	816
3·7	68	36	19	30	30	15	73	62	81	65	63	66	608
3·8	31	15	15	19	18	12	36	28	66	121	118	68	547
3·9	19	15	16	10	15	11	16	18	39	139	93	37	428
4·0 and Over	54	66	62	46	78	23	78	49	116	171	113	65	921
Totals ..	520	449	449	445	516	328	469	386	463	606	497	357	5485

Table 21 gives the frequencies for solids-not-fat. It has already been stated that the average figure for solids-not-fat for the year was 8·63 per cent., and the bulk of the individual figures for solids-not-fat are arranged closely around the average.



*Table 21.*  
*Composition of Milk : Frequencies.*  
 SOLIDS-NOT-FAT.

Per cent.	NUMBER OF SAMPLES.												
	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Under													
7.8	0	1	0	2	2	0	0	0	2	0	0	1	8
7.8	0	0	0	3	1	0	0	0	0	0	0	0	4
7.9	1	0	1	2	0	1	0	0	3	0	0	0	8
8.0	3	1	2	2	1	1	0	1	1	0	0	0	12
8.1	5	8	7	12	3	0	1	0	1	1	0	0	38
8.2	11	11	21	10	3	1	5	3	2	2	1	2	72
8.3	30	19	31	23	11	10	15	6	5	5	6	3	164
8.4	62	51	73	54	15	12	27	23	6	16	12	7	358
8.5	267	210	166	193	64	71	125	87	54	62	81	56	1436
8.6	95	77	76	87	134	105	131	116	107	111	164	135	1338
8.7	27	49	34	41	151	86	101	79	107	225	149	95	1144
8.8	10	14	19	8	66	19	36	33	107	120	42	30	507
8.9	6	5	12	4	42	11	15	22	44	42	29	15	247
9.0 and Over	3	3	7	4	23	11	13	13	24	22	13	13	149
Totals ..	520	449	449	445	516	328	469	386	463	606	497	357	5485

*Samples of Milk taken for Comparison.*

Part II of the Seventh Schedule of the Food and Drugs Act, 1955, contains certain provisions relating to the procuring of comparison samples of milk. Briefly, when a sample of milk is obtained from a vendor he must, if so requested, give to the Sampling Officer the name and address of the person from whom he, in turn, received the milk. The vendor may also, within 60 hours of the sample being taken, serve on the Food and Drugs Authority a notice stating the name and address of the person from whom he received the milk and the time and place of delivery to himself of milk from a corresponding milking, and requesting the Authority to procure, as soon as practicable, a sample of milk from a corresponding milking in course of transit or delivery to himself. The vendor shall have no right to request such a sample if the original sample procured from him was a mixture of milk produced on more than one dairy farm. In turn, the dairyman from whom such a sample of milk is procured in course of transit or delivery, may, within 60 hours after the sample was procured, serve on the Authority concerned a notice requesting

that immediate steps be taken to procure a sample of milk from a corresponding milking of the cows. The person procuring this last sample shall be empowered to take such steps at the dairy as may be necessary to satisfy him that the sample is a fair sample of the milk of the cows when properly and fully milked.

It is the practice in the County for the Sampling Officers to take, in appropriate cases, follow-up and appeal-to-cow samples without a formal request being made by the vendor. This involves a considerable amount of work both for the Sampling Officers and the Analyst. Sometimes both types of samples are obtained and as many as six and occasionally even a greater number of samples may be taken in connection with one unsatisfactory sample. For example, during the year under review 41 appeal-to-cow samples were taken in connection with two original samples of milk (see table 22). It is thought desirable to undertake this large amount of work to ensure that everything possible is done to establish beyond all reasonable doubt that a sample is adulterated and not of naturally poor quality and, if adulterated, to obtain information indicating where the adulteration occurred before deciding whether legal proceedings should be instituted.

#### *Appeal-to-Cow Samples.*

Appeal-to-cow samples, or, as they are sometimes called, "byre" samples, if the method of taking them is properly carried out in every detail, may be regarded in the light of a final appeal. The milking must be carefully supervised, it must be established that the same cows are milked, that it is the corresponding milking and the dairy equipment must be inspected to see that it is clean and dry. The results of analysis of samples procured in this way must be accepted as those pertaining to genuine milk. Appeal-to-cow samples serve at least two purposes. In the first place, they show, in cases where an unsatisfactory sample has been sold, the quality of the unadulterated milk given by the cows, and, secondly, extend our knowledge of the quality of the milk of different herds and of the natural variations which may occur in the composition of genuine milk.

It was with the former object in view that the practice of taking appeal-to-cow samples was instituted, *viz.*, to ascertain the composition of the milk given by the cows. It is now generally admitted that the composition of the milk from a herd of cows may occasionally fall below the limits laid down in the Sale of Milk Regulations, particularly at the morning milking. When such a milk is examined the question arises whether it is an unadulterated milk of poor quality, or a milk of normal composition which has been tampered with; the appeal-to-cow sample is intended to help to solve this problem.



In table 22, there is given a list of appeal-to-cow samples, submitted by County Sampling Officers during the year 1957, and also the results of analysis. Seventy-seven such samples are included, representing 11 herds, the number of cows in the herds varying from 11 to 103.

In addition two appeal-to-cow samples were examined for autonomous authorities.

Table 22.

*Analysis of Appeal-to-Cow Samples of Milk.*

Number	Number of Cows Milked.	Approximate yield, gallons.	Morning or Evening.	Fat per cent.	Solids-not-fat per cent.	Freezing Point (Hortvet) °C.	Taken for comparison with numbers.	Observations.
466	2	1½	M	3.55	8.65	—0.541	N.6942	
467	9	9		3.05	8.53	—0.546		
S.8742	9	8		5.35	8.83	—0.553		
S.8743	13	8	E	5.75	8.80	—0.552		
S.8744	13	9		4.65	9.01	—0.557		
S.8745	10	9		4.80	8.86	—0.556		
S.8746	4	6		4.35	8.83	—0.567		
S.8747	8	7½		3.95	8.67	—0.556		
S.8748	9	8		3.20	8.44	—0.551		Slightly low in solids-not-fat.
S.8749	3	6		3.15	8.65	—0.556		
S.8750	6	8		3.70	8.64	—0.554		
S.8751	6	9		3.45	8.42	—0.549		Slightly low in solids-not fat.
S.8752	6	8		4.25	8.41	—0.554		Slightly low in solids-not-fat.
S.8753	4	9		3.55	8.40	—0.550		Slightly low in solids-not-fat.
S.8754	3	7		3.60	8.74	—0.556		
S.8755	3	8		3.85	8.51	—0.552		
S.8756	3	8		3.45	8.43	—0.555		Slightly low in solids-not-fat.
S.8757	3	9		3.30	8.38	—0.553		Low in solids-not-fat.
S.8758	3	8		3.15	8.48	—0.555		Slightly low in solids-not-fat.
S.8759	3	8		2.95	8.55	—0.553		Poor in fat.
S.8760	3	8		3.25	8.57	—0.557		
S.8761	4	10		3.00	8.31	—0.555		Low in solids-not-fat.
S.8762	4	8		2.55	8.36	—0.553		Poor in fat and low in solids-not-fat.
S.8763	4	7		2.55	8.21	—0.552		Poor in fat and low in solids-not-fat.
S.8764	4	8		2.30	8.22	—0.552		Poor in fat and low in solids-not-fat.



Table 22—continued.

Number	Number of Cows Milked.	Approximate yield, gallons.	Morning or Evening.	Fat per cent.	Solids-not-fat per cent.	Freezing Point (Hortvet) °C.	Taken for comparison with numbers.	Observations.
S.8765	5	9	M	2.75	8.47	—0.547	S.8738 and S.8739	Poor in fat and slightly low in solids-not-fat.
S.8766	4	9		3.50	8.34	—0.551		Low in solids-not-fat.
S.8767	5	8		2.65	8.78	—0.554		Poor in fat.
S.8768	3	7		2.80	8.79	—0.555		Poor in fat.
S.8769	6	8		2.60	8.38	—0.556		Poor in fat and low in solids-not-fat.
S.8770	4	8		3.10	8.50	—0.555		
S.8771	5	8		2.90	8.35	—0.553		Poor in fat and low in solids-not-fat.
S.8772	4	5		3.10	8.69	—0.554		
S.8773	4	7		3.10	8.66	—0.554		
S.8774	6	8		2.95	8.79	—0.548		Poor in fat.
S.8775	7	9		3.35	8.85	—0.555		
S.8776	4	8		2.40	8.92	—0.550		Poor in fat.
S.8777	5	7		2.35	9.00	—0.555		Poor in fat.
S.8778	3	6		2.40	8.94	—0.551		Poor in fat.
S.8779	3	8		2.20	8.64	—0.553		Poor in fat.
S.8780	3	7	M	3.05	8.95	—0.544	N.7159	
S.8781	2	7		2.40	8.43	—0.552		Poor in fat and slightly low in solids not-fat.
S.8782	2	7		2.40	8.98	—0.555		Poor in fat.
468	6	10		2.65	8.41	—0.541		Poor in fat and slightly low in solids-not-fat.
469	1	11½		2.05	8.19	—0.539		Poor in fat and low in solids not-fat.
470	7	12		2.80	8.64	—0.544		Poor in fat.
471	29	10		2.20	9.08	—0.540		Poor in fat.
472		10		2.20	9.18	—0.541		Poor in fat.
473		10		2.30	9.04	—0.541		Poor in fat.
474		10		1.90	9.06	—0.540		Poor in fat.
475		8		2.00	9.20	—0.542		Poor in fat.
385	35	11	M	3.20	9.36	—0.539	E.9270 and E.9272	
386		12		3.37	9.13	—0.542		
387		12		2.95	8.75	—0.535		Poor in fat.
388		10		3.32	9.16	—0.537		
389		6		4.02	9.06	—0.536		

Table 22—continued.

Number	Number of Cows Milked.	Approximate yield, gallons.	Morning or Evening.	Fat per cent.	Solids-not-fat per cent.	Freezing Point (Hortvet) °C.	Taken for comparison with numbers.	Observations.
551	30	8½	M	3.15	8.43	—0.526	C.8265	The sample had a normal fat content but had a slightly low solids-not-fat content and a freezing point (Hortvet) which was abnormally high.
552		6		3.40	8.70	—0.530		
553		6½		3.45	8.88	—0.531		
554		6		3.30	8.86	—0.530		
555		9		3.50	8.88	—0.530		
556		3		3.45	8.99	—0.531		
557	30	10	E	3.55	8.57	—0.538	C.8265	
558		10		4.20	8.50	—0.539		
559		9		4.00	8.60	—0.537		
560		10		4.32	9.02	—0.542		
561		2		3.65	8.99	—0.539		
562		10		3.05	8.51	—0.532		
563	30	9	M	3.25	8.55	—0.532	C.8265	
564		10		3.27	8.77	—0.533		
565		5		3.80	8.64	—0.533		
566		5		3.90	9.20	—0.534		
567		2½		4.10	9.56	—0.537		
476	7	7	E	5.55	8.65	—0.543	N.7936 and N.7937	Rich in fat.
477	4	3		5.40	9.20	—0.546		Rich in fat.
478	5½	10	M.	2.70	8.68	—0.538	N.7934 and N.7935	Poor in fat.
479	5½	9½		3.37	9.01	—0.537		

An inspection of table 22 shows that the freezing point depression of the appeal-to-cow samples was determined in every case, and this gave valuable evidence of the authenticity of the samples. Although, as indicated in the next paragraph, a number of the appeal-to-cow samples were naturally poor in solids-not-fat, in only one instance was the freezing point of the sample above —0.530°C (Hortvet), the figure which is usually accepted as the highest freezing point normally given by milk free from extraneous water. Reference to table 22 will show that appeal-to-cow

sample, No. 551, had a normal fat content but had a slightly low solids-not-fat content and a freezing point of  $-0.526^{\circ}\text{C}$  (Hortvet), a figure which is abnormally high. Several of the other appeal-to-cow samples from the same herd gave freezing point results which approximated very closely to the normally accepted limit of  $-0.530^{\circ}\text{C}$  (Hortvet). The freezing point of the remaining 76 appeal-to-cow samples varied between  $-0.530^{\circ}\text{C}$  (Hortvet) to  $-0.557^{\circ}\text{C}$  (Hortvet); the average figure being  $-0.546^{\circ}\text{C}$  (Hortvet). The average freezing points of appeal-to-cow samples examined during the five years 1952 to 1956 inclusive were  $-0.540^{\circ}\text{C}$ .,  $-0.540^{\circ}\text{C}$ .,  $-0.539^{\circ}\text{C}$ .,  $-0.539^{\circ}\text{C}$ . and  $-0.539^{\circ}\text{C}$ .

A further examination of the results in table 22 makes it obvious that some of the samples did not attain the presumptive limits of 3.0 per cent. for fat and 8.5 per cent. for solids-not-fat laid down by the Sale of Milk Regulations, 1939. In this respect 26 samples contained less than 3.0 per cent. fat and 19 samples contained less than 8.5 per cent. solids-not-fat. It must be remembered, however, that the appeal-to-cow samples listed in the above table were all taken in connection with previous samples of milk which were either adulterated or of unsatisfactory quality; in other words, the high proportion of poor quality appeal-to-cow samples obtained is due to selective sampling and it cannot, therefore, be assumed that the results are indicative of the general quality of milk in Lancashire.

In tables 23 and 24 will be found the analytical results obtained in respect of the 77 appeal-to-cows samples, submitted by County Sampling Officers, arranged to show their frequencies in respect of fat content and solids-not-fat.

*Table 23.*  
*Appeal-to-Cow Samples.—Frequencies.*

FAT.		
Per cent.	Number of Samples.	Percentage of Total Samples.
1.9    ...    ...	1	1.3
2.0    ...    ...	2	2.6
2.2    ...    ...	3	3.9
2.3    ...    ...	3	3.9
2.4    ...    ...	4	5.2



Table 23—continued.

Per cent.	Number of Samples.	Percentage of Total Samples.
2.5    ...    ...	3	3.9
2.6    ...    ...	3	3.9
2.7    ...    ...	2	2.6
2.8    ...    ...	2	2.6
2.9    ...    ...	4	5.2
3.0    ...    ...	4	5.2
3.1    ...    ...	6	7.8
3.2    ...    ...	5	6.5
3.3    ...    ...	6	7.8
3.4    ...    ...	5	6.5
3.5    ...    ...	4	5.1
3.6    ...    ...	2	2.6
3.7    ...    ...	1	1.3
3.8    ...    ...	2	2.6
3.9    ...    ...	2	2.6
4.0    ...    ...	2	2.6
4.1    ...    ...	1	1.3
4.2    ...    ...	2	2.6
4.3    ...    ...	2	2.6
4.6    ...    ...	1	1.3
4.8    ...    ...	1	1.3
5.3    ...    ...	1	1.3
5.4    ...    ...	1	1.3
5.5    ...    ...	1	1.3
5.7    ...    ...	1	1.3
Total    ...	77	100.0

*Table 24.*  
*Appeal-to-Cow Samples.—Frequencies.*

SOLIDS-NOT-FAT.

Per cent.	Number of Samples.	Percentage of Total Samples.
8.1    ...    ...	1	1.3
8.2    ...    ...	2	2.6
8.3    ...    ...	6	7.8
8.4    ...    ...	10	13.0
8.5    ...    ...	9	11.7
8.6    ...    ...	12	15.6
8.7    ...    ...	7	9.0
8.8    ...    ...	8	10.4
8.9    ...    ...	6	7.8
9.0    ...    ...	8	10.4
9.1    ...    ...	3	3.9
9.2    ...    ...	3	3.9
9.3    ...    ...	1	1.3
9.5    ...    ...	1	1.3
Total    ...	77	100.0

*Milk Supplied to Schools, Day Nurseries, Children's Homes and Hostels  
for the Aged.*

The 320 samples of milk marked "Private" in table 3 were taken from consignments delivered to Schools, Day Nurseries, Children's Homes and Hostels for the Aged in the County. Thirteen of these samples were adulterated, corresponding to an adulteration rate of 4.3 per cent. This figure is higher than the total milk adulteration rate for the County which was 3.5 per cent.

Of the 320 samples 261 were taken at Schools. Thirteen of these were found to be adulterated or otherwise unsatisfactory. Repeat samples taken in respect of four of these samples were found to be genuine.

Three samples showed slight fat deficiencies and the different vendors were notified of the results. One sample showed a fat deficiency of 20 per cent. but a follow-up sample was found to be only slightly deficient in fat and the vendor was notified of the results. Two samples were found to contain very slight amounts of extraneous water and the respective vendors were cautioned. The two remaining samples both contained particles of broken glass. The producer of one of these samples was interviewed and cautioned. With regard to the other sample, a prosecution under Section 2 of the Food and Drugs Act, 1955, was instituted against the vendor who was fined £50 and £5 5s. costs.

With regard to the 41 remaining samples, eight were taken at Day Nurseries, 10 at Children's Homes and 23 at Hostels for the Aged. All these samples were found to be satisfactory.

*Samples of Milk deficient in solids-not-fat but genuine.*

Attention has already been drawn, in the sections of this Report dealing with the "Standards of quality for milk" and "appeal-to-cow" samples, to the fact that milk as it comes from the cow is not always of such quality as to comply with the minimum presumptive limits of 3·0 per cent. for milk-fat and 8·5 per cent. for solids-not-fat, of the Sale of Milk Regulations, 1939. In order to decide whether such samples submitted under the Food and Drugs Act were in fact as given by the cow, and therefore, genuine, it is still necessary in the case of presumed fat deficiencies to make an actual comparison with an "appeal-to-cow" sample from a corresponding milking. Formerly, this was also the only means by which it could be decided whether a sample low in solids-not-fat was of naturally poor quality or whether it had been adulterated by the addition of water. For the past 30 years or so, however, it has been possible by submitting the sample to the Hortvet freezing point test for the Analyst to obtain additional evidence that a deficiency in solids-not-fat was due to the presence of extraneous water or, alternatively, that it was due to natural causes.

In the section of the revised Ministry of Health memorandum 36/Foods (1939), dealing with Public Analysts' quarterly reports, it is laid down that in the case of samples below the presumptive limits of the Sale of Milk Regulations, the report should show whether they were adjudged genuine by the Analyst on other grounds. It is now the normal procedure to submit all samples low in solids-not-fat to the Hortvet freezing point test and to include in the quarterly reports a table giving details of such samples which satisfactorily pass the test.



During the year under review, 582 County samples of milk were found to be poor in solids-not-fat, but were adjudged genuine by the Hortvet freezing point test. This figure corresponds to 10·6 per cent. of the total milk samples (including appeal-to-cow) submitted by County Sampling Officers. These poor quality milks were distributed over the year as follows :—310 in the March quarter, 141 in the June quarter, 84 in the September quarter and 47 in the December quarter. The samples were not, therefore, confined to any particular season of the year, although the greatest number was obtained towards the end of the winter and the lowest in the autumn. The lowest figure for solids-not-fat shown by any of these samples was 7·85 per cent., the next lowest being 7·90 per cent.

Each year it is usual to find an appreciable number of milk samples which are poor in solids-not-fat but are nevertheless adjudged genuine as the result of applying the Hortvet freezing point test. The number of such samples, *viz.*, 10·6 per cent., submitted during the year under review is lower by 0·6 per cent. than for the year 1956, when the figure was 11·2 per cent. In the five years preceding the year 1956 the percentage of milk samples coming under this heading varied from 4·3 to 7·9 per cent.

It will be noted that the percentage of milk samples poor in solids-not-fat but genuine by the freezing point test for the year 1957, *viz.*, 10·6 per cent. is also proportionately very high when compared with the percentage of adulterated milk samples for the same year, *viz.*, 3·5 per cent. The difference is even more striking when it is considered that the last mentioned figure includes all samples containing extraneous water and all samples containing less than 3·0 per cent. milk fat whether or not, in the latter instance, the corresponding appeal-to-cow samples indicated that the fat deficiencies were actually due to abstraction or merely to natural causes.

#### *Adulteration of Articles other than Milk.*

During the year under review there were examined for the County 2,828 samples other than milk; of these 159 were reported against, which corresponds to an adulteration rate of 5·6 per cent., which is higher than the figure obtained in the year 1956, when it was 5·0 per cent. The percentage of adulteration in articles other than milk for the year under review, was much higher than that for milk, *viz.*, 3·5 per cent. An examination of tables 3 and 25 shows that the commodities which had a relatively high proportion of unsatisfactory samples, and, therefore, contributed especially to the overall adulteration rate, included flour, ice-cream, sausages, tincture of iodine and samples whose labels did not conform to the requirements of the Labelling of Food Order.

Table 25 gives a list of the articles other than milk submitted by County Sampling Officers which were found to be unsatisfactory with particulars of the type of adulteration and the action taken.

*Table 25.*

*Samples, other than Milk, Adulterated or otherwise giving rise to Irregularity.*

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.6693 ..	Part Bottle .. of Orange Drink	Informal	Contained fragments of broken glass weighing in all 4.39 grammes	Section 2 Food and Drugs Act, 1955. Fined £25 and £4 18s. costs.
C.6931 ..	Vinegar ..	Informal	Contained 0.6 per cent. salt without declaration on label	Packers took steps to prevent a recurrence.
N.6706 ..	Borax ..	Informal	Statement on label re use as a Food Preservative is a contravention of Regulation 5 of the Public Health (Preservative, etc., in Food) Regulations. Labelled "Purified Borax" yet Arsenic content 4.7 parts per million i.e. 0.7 parts per million above maximum B.P. limit.	Packers agreed to delete wording relating to the use of borax as a preservative from their labels and also to take steps to ensure that only Borax of B.P. quality is used in future.
E.8367 ..	Black Beer ..	Informal	Composition equivalent to 1,590 calories per bottle instead of 2,000 calories claimed.	See No. E.8710.
E.8394 ..	Apple Juice, .. Bottled	Informal	Sample was turbid and contained a deposit (0.3 gramme) of tannins, etc., which rendered the product unsightly.	Old stock. Remaining stock withdrawn from sale.
E.8397 ..	Flour, Plain ..	Informal	Contained 480 mgms. calcium carbonate per 100 grammes of flour. Maximum quantity permitted by the Flour (Composition) Regulations 390 mgms. per 100 grammes of flour.	Millers communicated with. Adjustments made to mixing equipment.
C.7003 ..	Pork Sausages ..	Informal	Contained 200 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor cautioned.
E.8414 ..	Powdered Borax ..	Informal	Borax is a preservative not permitted in food therefore directions on label for addition to boiling vegetables should be deleted.	Packers agreed to alter labels and to recall stocks.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.6784 ..	Vinegar ..	Informal	Contained 0.5 per cent. salt without declaration on label.	Packers agreed to alter labels.
N.7686 ..	Boric Ointment ..	Informal	Contained only 0.74 per cent. Boric Acid. B.P. limits 0.9–1.1 per cent. Boric Acid.	Stock returned to manufacturers.
N.6787 ..	Saccharin Tablets ..	Informal	Contained 0.17 grain of saccharin per tablet. Requirement of Food Standards (Saccharin Tablets) Order, 1953, is 0.18 to 0.22 grain per tablet.	Packers gave an assurance that steps would be taken to prevent a deficiency in future.
C.7055 ..	Camphorated oil ..	Informal	Camphor absent—sample consisted of Olive Oil.	Vendor communicated with. Formal sample genuine.
C.7061 ..	Custard Powder ..	Informal	Contained 0.5 per cent. salt without declaration.	Old stock. Correct labels now in use.
E.9215 ..	Icing Sugar, Flavoured ..	Informal	Word “Lemon” in much larger type than words “edible colour and flavour” also calcium phosphate declared on separate part of label. List of ingredients should be complete and in correct order and qualifying words should be in same size print.	Old stock. Correct labels now in use.
C.7104 ..	Pork Sausage Meat ..	Informal	Meat content only 54 per cent.	Vendor interviewed.
E.9128 ..	Pea Nut Butter ..	Informal	Vitamin A only 575 I.U.s. per ounce. Declared a minimum of 760 I.U.s. per ounce.	See No. E.9181.
E.9181 ..	Pea Nut Butter ..	Informal	Vitamin A only 730 I.U.s. per ounce. Declared a minimum of 760 I.U.s. per ounce.	Packers decided to delete reference to vitamins from labels.
C.7141 ..	Vitamin C Limes ..	Informal	Sample consisted of two packets. Lozenges in one packet contained 3.8 mgms. Ascorbic Acid per lozenge. Lozenges in other packet contained 4.3 mgms. Ascorbic Acid per lozenge. Declared to contain 4.5 mgms. Ascorbic Acid per lozenge.	Manufacturers increased Ascorbic Acid content to allow for loss of Vitamin C. See also sample No. N.6925.
C.7143 ..	Beef Sausages ..	Informal	Contained 190 parts per million sulphite preservative (expressed as sulphur dioxide) without declaration.	Notice regarding the presence of preservatives in sausages now displayed in shop.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
S.8535 ..	Fresh Fruit .. (Apples)	Informal	Two apples contained lead 2·8 parts per million, arsenic 1·2 parts per million. One apple contained lead 20·5 parts per million, arsenic 5·4 parts per million. Recommended limits lead 2 parts per million, arsenic 1 part per million.	See also No. S.8566.
S.8566 ..	Fresh Fruit .. (Apples)	Informal	Two apples contained lead 2·6 parts per million (Arsenic 0·9 part per million). Two apples contained lead 6·0 parts per million, Arsenic 2·3 parts per million. Recommended limits lead 2 parts per million, Arsenic 1 part per million.	Importers, Port Health Authority and Ministry of Agriculture, Fisheries and Food informed. Stock withdrawn from sale. Same vendor and source as sample No. S.8535.
N.6925 ..	Vitamin C .. Limes	Informal	Contained 3·6 mgms. Ascorbic Acid per lozenge. Declared to contain 4·5 mgms. Ascorbic Acid per lozenge.	Same manufacturer as sample No. C.7141.
E.8543 ..	Glycerin .. B.P.	Informal	Contained 0·8 per cent. excess water. Bottle had faulty cap.	Product withdrawn from sale.
E.8515 ..	Kola-nut .. Non-Alcoholic Wine	Informal	Contained 1,350 parts per million benzoic acid (maximum permitted limit 600 parts per million) and 1·9 parts per million lead (recommended limit 0·5 part per million).	Commodity withdrawn from sale.
E.8590 ..	Orange .. Drink	Informal	Contained 0·018 per cent. saccharin. Maximum limit of the Food Standards (Soft Drinks) Order corresponds to 0·0117 per cent. saccharin.	Manufacturers undertook to pay particular attention to the mixing of the concentrates used in future.
N.6953 ..	Flour, Plain ..	Informal	Contained only 47 mgms. Creta Praeparata per 100 grammes flour. Flour (Composition) Regulations, 1956, require 235 to 390 mgms. Creta Praeparata per 100 grammes of flour.	Millers gave an assurance that every care would be taken to ensure that their flour complied with all statutory requirements.
N.6978 ..	Pork .. Sausages	Informal	Contained 110 parts per million sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor communicated with.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.6985 ..	Vitamin C Tablets ..	Informal	Consisted of 50 mgm. tablets but not stated to be such. B.P. requires 25 mgm. tablets to be supplied unless declared otherwise. Also label stated one tablet three times a day whereas B.P. Prophylactic dose is 25-75 mgms. daily or therapeutic dose 0.2-0.5 gramme daily.	Vendor communicated with.
S.8722 ..	Glycerin ..	Informal	Contained 1.5 per cent. excess water.	Stock withdrawn from sale.
C.7356 ..	Beef Sausages ..	Informal	Meat content 47 per cent.	Advised vendor be interviewed.
E.8710 ..	Black Beer ..	Informal	Composition equivalent to 1,650 calories per bottle compared with "almost 2,000" claimed in advertisement leaflet.	Manufacturers communicated with. Same manufacturer as sample No. E.8367. New leaflets contain no reference to calorific value of this commodity.
E.3711 ..	Flour ..	Private (School Kitchen)	Contained only 212 mgms. calcium carbonate per 100 grammes of flour and a few mites and mould filaments.	No action advised. Same source as sample No. E.3713.
E.3713 ..	Flour ..	Private (School)	Contained only 82 mgms. Creta Praeparata per 100 grammes of flour. Flour (Composition) Regulations, 1956, require 235-390 mgms. Creta Praeparata per 100 grammes.	Millers gave an assurance that everything possible would be done to prevent any recurrence in future.
E.3715 ..	Portion of Meat Pie ..	Informal	Contained embedded in the top crust pastry a 1956 English Halfpenny.	Section 2 Food and Drugs Act, 1955. Fined £5 and £6 13s. costs.
N.7130 ..	Compound Liquorice Powder ..	Informal	Sample damp and caked.	Remainder of stock surrendered and destroyed.
E.8815 ..	Beef Sausages ..	Informal	Meat content only 46 per cent.	Vendor interviewed.
E.8816 ..	Pork Sausages ..	Informal	Meat content only 47.5 per cent.	See No. E.9545.
E.8829 ..	Pork Sausages ..	Informal	Meat content only 64 per cent. Contained 100 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor cautioned re preservative.
E.8860 ..	Pork Sausages ..	Informal	Meat content only 61 per cent.	Vendor interviewed.
C.7533 ..	Sago ..	Informal	Consisted of Tapioca	Vendor communicated with.
C.7535 ..	Sago ..	Informal	Consisted of Tapioca	Vendor communicated with.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
C.7577 ..	Channel Islands Milk ..	Informal	Deficient of 16.2 per cent. fat.	Further sample genuine.
S.8968 ..	Tomato Chutney ..	Informal	Contained 22.8 parts per million of copper <i>i.e.</i> 2.8 parts per million in excess of the recommended maximum limit.	Stock withdrawn from sale.
C.7604 ..	Ice-Cream ..	Informal	Fat content only 3.4 per cent.	See No. C.7805.
N.7259 ..	Sago ..	Informal	Consisted of Tapioca.	Vendor interviewed.
E.8951 ..	Iodine, Tincture of B.P. ..	Informal	Contained 0.04 per cent. potassium iodide in excess of the maximum B.P. allowance.	No action advised.
E.8953 ..	Fish Paste ..	Formal	Deficient 71 per cent. of the minimum percentage of fish.	Section 2 Food and Drugs Act, 1955. Fined £5 and £4 18s. costs.
E.8973 ..	Iodine, Tincture of B.P. ..	Informal	Iodine 0.11 per cent. below B.P. minimum limit.	Packers communicated with. Old stock.
N.7285 ..	Ammoniated Mercury Ointment ..	Informal	Ointment did not bear the word "Poison" or the name and address of the vendor or the name of the preparation.	Vendor interviewed.
N.7313 ..	Channel Islands Milk ..	Formal	Deficient 1.2 per cent. fat.	Vendor cautioned. Ministry of Agriculture, Fisheries and Food informed. Further sample genuine.
E.9000 ..	Iodine, Tincture of B.P. ..	Informal	Contained iodine 0.1 per cent. in excess of maximum B.P. limit.	Vendor communicated with.
E.9002 ..	Ice-Cream ..	Informal	Fat content only 4.9 per cent.	Vendor agreed to amend his formula.
E.9026 ..	Iodine, Tincture of B.P. ..	Informal	Contained 0.05 per cent. Iodine in excess of the maximum B.P. limit.	No action advised.
N.7322 ..	Ice-Cream ..	Informal	Fat content only 4.35 per cent.	Vendor agreed to increase fat content. Further sample genuine.
N.7340 ..	Potato Crisps ..	Informal	Advertisement declares Vitamin B and Vitamin C incorrectly. Both should be expressed as milligrams per ounce. The quantity of Vitamin B <sub>1</sub> found was 0.035 milligrams per ounce and was less than the quantity considered necessary to justify a claim for this vitamin.	Packers took steps to alter advertisements.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
C.7730 ..	Iodine, .. Tincture of B.P.	Informal	Contained 0·3 per cent. iodine and 0·27 per cent. of potassium iodide above maximum B.P. limits.	Vendor undertook to take every precaution with regard to storage in future.
N.7357 ..	Ice-Cream ..	Informal	Contained only 9·3 per cent. sugar and 7·0 per cent. milk solids other than fat.	Further sample genuine.
E.9065 ..	Iodine, .. Tincture of B.P. (Colourless)	Informal	Iodine 4·4 per cent. Should be only 2·86 per cent. and should be labelled B.P.C. 1934. Declaration of Industrial Spirit should read 61° O.P. and not 61 U.P.	Manufacturers took steps to prevent a recurrence.
E.9069 ..	Fruit, .. Fresh (Pears)	Informal	Contained lead 2·2 parts per million.	No action advised.
C.7771 ..	Iodine, .. Tincture of B.P.	Informal	Contained 0·05 per cent. iodine in excess of the maximum B.P. limit.	No action advised.
C.7772 ..	Ammoniated .. Mercury Ointment	Informal	Container not labelled "Poison"	Vendor interviewed.
N.7421 ..	Channel .. Islands Milk	Formal	Deficient 2·5 per cent. fat.	Vendor cautioned. Ministry of Agriculture, Fisheries and Food informed. Further sample genuine.
E.9238 ..	Baking .. Powder	Informal	Available carbon dioxide only 7·0 per cent. Minimum standard is 8·0 per cent.	Stock surrendered.
C.7805 ..	Ice-Cream ..	Formal	Fat content only 4·2 per cent.	Vendor interviewed. Further sample genuine.
E.3723 ..	Piece of .. bread and marmalade containing foreign object	Private (Day Nursery)	Contained one dead corn or flour beetle <i>Gnathocerus Cornutus</i> .	} County Medical Officer informed. Bakers cautioned and bakery inspected. Both from same source.
E.3724 ..	Two slices .. of white bread containing foreign objects.	Private (Day Nursery)	Containing a beetle thorax and an abdomen resembling those of <i>Gnathocerus Cornutus</i> .	
M.7354 ..	One Biscuit ..	Informal	Had a brown stain on the top surface. Staining was due to the biscuit having been splashed with used lubricating oil or grease.	Referred to Food and Drugs Authority of manufacturers area.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.7479 ..	Pork Sausages ..	Informal	Contained only 57 per cent. of meat and contained 150 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Advised vendor be interviewed and further sample obtained.
S.9277 ..	Boneless Turkey, Canned ..	Informal	Contained 14 per cent. excess moisture. Should therefore be labelled Boneless Turkey with Stock.	Packers agreed to alter label.
E.9378 ..	Channel Islands Milk ..	Informal	Deficient 11.2 per cent. fat.	Formal sample genuine.
E.9387 ..	Milk Chocolate "Egg-lets" ..	Informal	Label states "Double Cream Filled." "Double Cream" is a description specified under the Food Standards (Cream) Order, 1951. The filling was devoid of cream or double cream and this description could be misleading and could also be a misuse of the designation "Cream" under Section 47 of the Food and Drugs Act.	Commodity withdrawn from sale.
C.7911 ..	Ice-Cream ..	Informal	Fat content only 3.2 per cent.	Formal sample advised. See No. C.7966.
C.7929 ..	Sweets ..	Informal	Claims "Rich in Energising Glucose" whereas ingredient used was glucose syrup solids and the actual amount of glucose (dextrose) present was only 6.5 per cent.	Packers agreed to alter label.
N.7542 ..	Flour, Plain ..	Informal	Creta Praeparata only 222 mgms per 100 gms. Iron only 1.4 mgms per 100 gms.	No action advised.
E.3725 ..	Bread (part of a loaf and one one slice) ..	Private (Day Nursery)	Contained dark brown material, weighing in all 0.35 gramme, which consisted of dough contaminated with dirty or used lubricating oil or grease.	County Medical Officer informed. Bakers cautioned.
C.7966 ..	Ice-Cream ..	Formal	Deficient 40 per cent. of the minimum percentage of fat.	Section 2 Food and Drugs Act, 1955. Fined £10 and £5 19s. costs.
N.7599 ..	Bread, Sliced Loaf ..	Informal	Contained a Larder beetle.	Referred to Local Authority.
S.9345 ..	Cheese ..	Informal	Fat content (calculated on dry matter) only 44.1 per cent.	No action advised.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
1 ..	Pickled Beef with Brine ..	Informal	Contained 120 parts per million Copper in the meat and 84 parts per million in the brine and 2.9 parts per million Lead in the brine.	Vendor cautioned.
C.8012 ..	Fruit, Canned ..	Informal	"Diced Pears" in greatest quantity in can than "Diced Peaches" yet Peaches headed the list of ingredients.	No further stock available.
E.3728 ..	Morning Fruit Drink ..	Informal	Contained piece of used Chewing Gum.	Section 2 Food and Drugs Act, 1955. Fined £2 and £8 costs.
E.9451 ..	Re-distilled Glycerin ..	Informal	Contained 3 per cent. excess water but bottle insecurely capped.	See sample No. E.9800.
S.9432 ..	Glycerin ..	Informal	Contained 1.2 per cent. excess water.	Stock withdrawn from sale.
E.9478 ..	Glycerin ..	Informal	Contained 1.1 per cent. excess water.	Vendor communicated with.
E.9473 ..	Ice Lollies ..	Informal	List of ingredients includes the word "Preservatives." The specific name of the preservative should be declared.	Manufacturers agreed to alter label. See also samples Nos. S.9454 and S.9455.
E.9475 ..	Flour, Plain ..	Informal	Contained Creta Praeparata 209 milligrammes per 100 grammes (limits 235—390 milligrammes per 100 grammes) and Iron 1.47 milligrammes per 100 grammes (limit not less than 1.65 milligrammes per 100 grammes).	No action advised.
C.8050 ..	Seidlitz Powders ..	Informal	Sample consisted of four powders. The blue packets weighed 10.68 grammes, 10.76 grammes, 10.77 grammes and 11.02 grammes and two of the white packets also weighed 3.00 grammes and 2.76 grammes respectively. B.P. limits 9.5—10.5 grammes for blue packets and 2.25—2.75 grammes for white packets.	Stock withdrawn from sale and returned to manufacturers.
C.8052 ..	Seidlitz Powders Extra Strong ..	Informal	Sample consisted of four powders. The blue packets contained 14.73 grammes, 14.80 grammes, 14.99 grammes and 14.84 grammes respectively. B.P.C. limit 13.0—14.4 grammes.	Vendor communicated with.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.7677 ..	Seidlitz Powders ..	Informal	Three powders submitted. One of the white packets weighed 2.80 grammes. B.P. limit 2.25—2.75 grammes.	No action advised.
N.7713 ..	Flour ..	Informal	Contained Creta Praeparata 430 milligrammes per 100 grammes (limits 235—390 milligrammes per 100 grammes).	No action advised.
S.9454 ...	Ice Lollies ...	Informal	List of ingredients includes the word "Preservatives." The specific name of the preservative should be declared.	Same manufacturers as sample No. E.9473.
S.9455 ..	Ice Lollies ..	Informal	List of ingredients includes the word "Preservatives." The specific name of the preservative should be declared.	Same manufacturers as as sample No. E.9473.
E.9499 ..	Ice Lollies ..	Informal	"Sodium Aliginate" and "Fruit Juice" in wrong order in list of ingredients which also includes the word "Preservative." The specific name of the preservative should be declared.	Manufacturers agreed to alter label.
E.3729 ..	Kosher Bread ..	Informal	Contained 0.26 gramme of compressed vegetable-fibre material resembling card-board.	Baker cautioned.
E.9515 ..	Ice-Cream ..	Informal	Sugars only 8.9 per cent. but milk solids other than fat 16.5 per cent.	Vendor interviewed. Further sample genuine.
N.7737 ..	Glauber's Salt ..	Informal	Loss at 105°C only 29.7 per cent. B.P. limits for loss are 51.5 per cent. to 57.0 per cent. Declaration about liability to lose moisture should be extended to say that dose should be reduced proportionately to about one half.	Packers agreed to alter label.
N.7739 ..	Glauber's Salt ..	Informal	Loss at 105°C only 23.4 per cent. B.P. limits for loss are 51.5 per cent. to 57.0 per cent. Packed loose.	Remainder of stock discarded.
E.9545 ..	Pork Sausages ..	Informal	Meat content only 47.5 per cent.	Poor in meat content.
N.7772 ..	Mineral ..	Informal	Contained 90 parts per million sulphite preservative expressed as sulphur dioxide. Limit for sweetened mineral waters 70 parts per million.	Packer took steps to prevent a recurrence.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.7770 ..	Rum and Butter Toffee ..	Informal	An ingredient was declared as "Preserved Table Butter" whereas the constituents of this ingredient should be declared. Total butter-fat was only 5 per cent. so that Butter should be declared after all the other main ingredients.	Packers communicated with. Agreed to consider altering label when re-printing.
E.9581 ..	Oatmeal ..	Informal	Contained 5 live moth grubs and some cocoon webbing.	Referred to Local Public Health Inspector.
E.9582 ..	Treacle ..	Informal	Contained Copper 20.3 parts per million. Recommended limit 20 parts per million.	No action advised.
S.2944 ..	Small Loaf of Bread ..	Informal	Adhering and baked onto outside of bottom crust several fragments weighing in all 0.12 gramme and consisting of felted cotton impregnated with edible oil.	Baker cautioned.
E.9605 ..	Ice-Cream ..	Informal	Declared on placard "made with eggs, butter, full cream milk" but on carton stated "made with butter, sugar, eggs, full cream milk powder." These declarations are different and in different order as regards ingredients and are, therefore contradictory as to relative proportions of ingredients used. Furthermore, on analysis found that butter, sugar and full cream milk powder are each approximately equal in amount and each of the order of 14 per cent. whereas the liquid whole egg content was not more than 4 per cent. The word "eggs" should, therefore, appear last in the claim.	Packers agreed to alter wording on cartons and advertisements.
E.3731 ..	Sausages, canned ..	Informal	Contained one dead carnivorous ground beetle ( <i>Natiophilus</i> sp.). Lives on small insects and is not associated with food infestation.	Packers gave an assurance that all possible steps would be taken to prevent any recurrence in future.
C.8108 ..	Table Jelly ..	Informal	Net weight only 4.6 ounces. Declared 5 ounces.	Further samples genuine.
E.9638 ..	Sodium Bicarbonate ..	Informal	Contained Sodium Bicarbonate 51.3 per cent. and Borax 48.7 per cent.	See No. E.9646.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
N.7818 ..	Pork Sausages ..	Informal	Contained 260 parts per million sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor cautioned.
S.9562 ..	Beef Sausages ..	Informal	Contained 210 parts per million sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor cautioned.
E.9646 ..	Sodium Bicarbonate ..	Formal	Contained 42 per cent. Bicarbonate of Soda 43·5 per cent. Borax and 14·5 per cent. Boric Acid.	Manufacturers no longer in business.
E.9662 ..	Double Lemonade ..	Informal	Contained 0·015 per cent. Saccharin. Maximum limit of the Food Standards (Soft Drinks) Order corresponds to 0·0117 per cent. Saccharin. Composition otherwise corresponds to ordinary Lemonade and yet described as "Double Lemonade."	Packers agreed to alter labels.
C.8155 ..	Ice-Cream ..	Informal	Fat content only 4·75 per cent.	Vendor cautioned. Further sample genuine.
S.9585 ..	Channel Islands Milk ..	Formal	Fat content only 3·15 per cent. Deficient 21 per cent. fat.	Prosecution under Regulation 4 of the Milk and Dairies (Channel Islands and South Devon Milk). Regulations, 1956. Case dismissed.
C.8153 ..	Ice-Cream ..	Informal	Contained only 6·3 per cent. milk solids other than fat.	Vendor cautioned. Further sample genuine.
S.9667 ..	Cheese Spread ..	Informal	Fat content only 19·5 per cent. Recommended minimum limit 20 per cent. fat.	Further sample genuine.
E.9678 ..	Seidlitz Powders Extra Strong B.P.C. ..	Informal	Contents of two blue packets weighed 14·7 and 14·48 grammes. B.P.C. limits for blue packets 13·0 to 14·4 grammes.	See No. E.9752.
E.9715 ..	Glauber's Salt B.P. ..	Informal	Loss at 105°C only 50·6 per cent. B.P. limits 51·5—57·0 per cent.	No action advised.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
E.9713 ..	Fresh Orange and Glucose Drink to be diluted	Informal	Incomplete list of ingredients in wrong order, <i>i.e.</i> more orange juice present than dextrose. Contents claimed to include "Fresh Orange Juice" whereas preservative present and Vitamin C negligible. Word "fresh" should be omitted. Dextrose present only as part of invert sugar content. No indication given of presence of invert sugar or of dextrose and fructose.	Packers agreed to alter label.
E.9752 ..	Seidlitz .. Powders Extra Strong B.P.C	Informal	Sample consisted of three powders. One blue packet weighed 14.91 grammes and two white packets weighed respectively 2.99 and 3.24 grammes. B.P.C. limits are blue packets 13.0—14.4 grammes and white packets 2.25—2.75 grammes.	See also E.9678. Discrepancy arose due to faulty chemical balance. Packers gave an assurance that automatic machinery is now in use and it is unlikely that such an error will occur again.
C.8283 ..	Polony ..	Informal	Contained 155 parts per million sulphite preservative expressed as sulphur dioxide. Sulphite preservative is not permitted in sausage containing cooked meat.	Manufacturers communicated with.
N.7864 ..	Lemon .. Cheese	Informal	Soluble solids only 64.6 per cent. Deficient 0.4 per cent. soluble solids.	No action advised.
E.9800 ..	Re-distilled .. Glycerin B.P.	Informal	Contained 2.1 per cent. excess water. Bottle cap liner faulty	See also sample No. E.9451.
N.7918 ..	Pork .. Sausage	Informal	Meat content only 56.5 per cent.	Poor in meat content.
E.9799 ..	Soft Drink .. to be diluted	Informal	Labelled simply "Lemon." Consisted of a soft drink containing approximately 32 per cent. lemon and lemon juice. Should be labelled "Lemon Squash" or similar name to indicate its true nature.	Packers agreed to alter labels.
N.7961 ..	Pork .. Sausages	Informal	Meat content only 62.0 per cent. Contained 300 parts per million sulphite preservative (expressed as sulphur dioxide) without declaration.	Manufacturers communicated with re preservative. Correct notice now displayed.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
S.9851 ..	Jelly, Table ..	Informal	Word "Greengage" in much heavier type than word "flavour," also pictures of Greengage fruit conspicuous on label yet actual Greengage fruit or juice absent.	Packers communicated with. Manufacture discontinued.
E.9856 ..	Salmon Paste ..	Informal	Consisted of "Fish Paste (Salmon)."	Vendor cautioned and attention drawn to the Code of practice governing labelling of fish paste.
E.9916 ..	Orange Drink	Informal	Contained one large and several minute fragments of broken glass weighing in all 1.518 grammes.	Section 2 Food and Drugs Act, 1955. Fined £5 and £20 11s. costs.
E.9968 ..	Pork Sausages ..	Informal	Contained 230 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor communicated with. Agreed to display notice re preservative.
E.9993 ..	Pork Sausages ..	Informal	Contained 530 parts per million of sulphite preservative (expressed as sulphur dioxide). An excess of 80 parts per million above the permitted limit.	Vendor cautioned.
S.117 ..	Compound Aspirin Mixture, B.P.C. ..	Informal	Contained 1 per cent. of free salicylic acid. Appearance of old stock. This preparation has not been in B.P.C. since 1949.	Old stock. No further stock remaining.
E.43 ..	Beef Sausages ..	Informal	Contained 250 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor communicated with. Agreed to display notice re preservative.
E.44 ..	Beef Sausages ..	Informal	Contained 310 parts per million of sulphite preservative (expressed as sulphur dioxide) without declaration.	Vendor communicated with. Agreed to display notice re preservative
S.156 ..	Beef Sausages ..	Informal	Contained 615 parts per million of sulphite preservative (expressed as sulphur dioxide). An excess of 165 parts per million above the permitted limit.	Manufacturers cautioned.
N.8125 ..	Shredded Suet ..	Informal	Fat content 82 per cent. Food Standards (Suet) Order, 1952, requires 83 per cent.	No action advised.

Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
C.8562 ..	Rose Hip Syrup ..	Informal	Labelling of Food Order, para. 9, and the Second Schedule require declaration of Vitamin C in terms of milligrams per fluid ounce (not per 100 mls.).	Correct labels now in use.
S.195 ..	Portion of Fruit Malt Loaf ..	Informal	Contained four pieces of broken glass weighing in all 0.73 gramme.	Bakers cautioned.
E.122 ..	Maple Syrup	Informal	Contained 70 parts per million of zinc. Recommended limit 50 parts per million.	Further imports withheld until the presence of excess zinc is remedied.
N.8168 ..	Pork Sausages (Frozen) ..	Informal	Meat content only 52.5 per cent.	Poor in meat content.
C.8621 ..	Christmas Pudding ..	Informal	List of ingredients in wrong order.	Packers agreed to alter labels. See also Nos. N.8257 and E.352.
1/TP ..	Brown Bread, Complaint of discolouration	Informal	Sample was free from lubricating oil and iron oxide. Fault probably due to mixing of dough. Sample otherwise genuine.	No action advised.
N.8257 ..	Christmas Pudding ..	Informal	List of ingredients in wrong order.	Packers agreed to alter labels. See also Nos. C.8621 and E.352.
N.8277 ..	Piece of Ice Bun containing foreign body ..	Informal	Contained immature water louse.	Referred to Local Authority.
S.342 ..	Baking Powder ..	Informal	Available carbon dioxide only 6.5 per cent. minimum standard 8 per cent.	Stock surrendered and destroyed.
E.226 ..	Christmas Pudding ..	Informal	Sample consisted of three small puddings containing 6.8, 7.5 and 8.4 per cent. fat respectively. Christmas Puddings should contain not less than 9 per cent. fat.	Manufacturers took steps to prevent a recurrence.
N.8315 ..	Almonds, Ground ..	Informal	Acid value of oil 6.6.	No action advised.
E.277 ..	Orange and Lemon Slices ..	Informal	Appearance of crystallised Orange and Lemon Slices but consisted of an imitation sweetmeat. Word "flavoured" should appear after "Orange and Lemon" in the same size type.	Packers agreed to alter labels.
N.8404 ..	Soup Mixture ..	Informal	Carton bore no declaration of list of ingredients.	Packers undertook to alter labels.



Table 25—continued.

No. of Sample.	Description.	Formal, Informal or Private.	Nature of Adulteration or Irregularity.	Observations.
E.352 ..	Christmas Pudding ..	Informal	List of ingredients in wrong order.	Packers agreed to alter labels. See also C.8621 and N.8257.
C.8845 ..	Chopped Chicken Canned ..	Informal	Contained 80 per cent. chicken and 20 per cent. added water. Should be described as "Chopped Chicken in Chicken Stock" and not simply "Chopped Chicken."	Packers agreed to alter labels.
N.8425 ..	Orange and Lemon Slices ..	Informal	Consisted of an imitation sweetmeat yet described as "Orange and Lemon Slices" with realistic picture of sliced oranges and lemons and whole fruit. Should be described as "Orange and Lemon Jelly Slices" or "Orange and Lemon Flavoured Slices" and a picture more in keeping with the nature of the product.	Packers agreed to modify wording on labels.
E.360 ..	Biscuits ..	Informal	Fat content slightly rancid.	Referred to Local Authority.
N.8422 ..	Marzipan ..	Informal	Contained colouring without declaration in the list of ingredients.	Packers agreed to alter labels.
C.8887 ..	Rose Hip Syrup ..	Informal	Labelling of Food Order, para 9, and the Second Schedule require declaration of Vitamin C in terms of milligrammes per fluid ounce (not per 100 mls.).	Packers communicated with.
C.8889 ..	Marzipan ..	Informal	No name and address, no name of food or list of ingredients on label. Ground almond content only 20 per cent. (marzipan should contain at least 25 per cent.).	Packers undertook to take steps to prevent a recurrence.
N.8448 ..	Almond Paste ..	Informal	Almond content only 20 per cent., should contain at least 25 per cent.	Advised manufacturers be communicated with. See also sample No. E.424.
E.424 ..	Almond Paste ..	Informal	Almond content only 20 per cent., should contain at least 25 per cent.	Same manufacturers as No. N.8448.
N.8465 ..	Pork Sausages ..	Informal	Meat content only 62.0 per cent.	Slightly poor in meat content.
N.7492 ..	Meringue ..	Informal	Contained 53 particles of the nature of cake crumbs and a human hair three inches long.	Bakers interviewed and cautioned.

### THE LABELLING OF FOOD ORDER.

The first Labelling of Food Order was made in the year 1944 but it has been amended or re-enacted on several occasions since that time. The Order at present in force is the Labelling of Food Order, 1953, which came into operation on the 5th April of that year and which has been kept in force by the Twelfth Schedule of the Food and Drugs Act, 1955. Two amending Orders to the Labelling of Food Order, 1953, were made in the years 1953 and 1955 respectively.

During the year under review 34 samples (26 County and eight from Autonomous Authorities) were found to contravene the requirements of the Labelling of Food Order. Brief details of the 26 County samples will be found in table 25. Of the total number of samples to which exception was taken 21 (14 County) had labels which did not disclose one or more of the following requirements ; the name and address of the packer, the true name of the food or a correct list of ingredients. In each of the above instances the packers were communicated with and their attention drawn to the requirements of the Order. During the previous year, 1956, the number of samples which contravened the Labelling of Food Order was very similar, *viz.*, 19 County samples and 11 from Autonomous food and drugs authorities.

In the following paragraphs reference is made to a number of the more interesting samples, in relation to their labels submitted by County Sampling Officers.

#### *Rose Hip Syrup, Samples Nos. C.8562 and C.8887.*

These two informal samples of different manufacture were of satisfactory composition, but they both bore a declaration on the label in respect of their Vitamin C content which was given in terms of milligrammes per 100 millilitres of the product instead of milligrammes of Vitamin C per fluid ounce as required by Article 9 and Part I of the Second Schedule of the Labelling of Food Order, 1953. The manufacturers of sample No. C.8562 were communicated with during the year 1956 with regard to the labelling of similar samples and during the year under review two other samples of this manufacture, satisfactorily labelled, were examined. In view of this latter circumstance no further action in regard to sample No. C.8562 was deemed necessary. The manufacturers of sample No. C.8887 were also communicated with and in their reply they stated that there was a doubt as to whether Rose Hip Syrup was a food and whether it came under the Labelling of Food Order as it was prepared according to a standard laid down by the Ministry of Health. The manufacturers also stated that this matter was being considered by their Trade Association. In a further letter to the manu-



facturers it was pointed out that Rose Hip Syrup could be regarded as a food adjunct as it was very often used as an addition to the normal diet. Furthermore, the Food and Drugs Act, 1955, only excludes from the definition of "food" substances which can only be used as drugs. (The definition of "food" given in the Labelling of Food Order states "... an article shall not be deemed not to be a food by reason only that it is also capable of being used as a medicine"). Rose Hip Syrup is not a substance used only as a drug and the manufacturers were requested to write again after their Trade Association had considered the matter.

*Peanut Butter, Samples Nos. E.9128 and E.9181.*

These two informal prepacked samples were of the same manufacture and were both purchased from the same shop. Upon examination they were found to contain 575 International Units per ounce and 730 International Units per ounce respectively of Vitamin A against a declaration on the label which claimed a minimum of 760 International Units per ounce. Both samples were packed in colourless glass jars and on writing to the packers with regard to the deficiencies it was suggested that any loss due to storage might have been accentuated by the type of container used. In their reply the manufacturers stated that they had made every endeavour to ensure that the product complied with the Labelling of Food Order in that they had originally added an amount of Vitamin A considerably in excess of the minimum quantity claimed and had taken steps to see that it was evenly incorporated. In view, however, of the analytical results now brought to their notice they had decided not to include any mention of vitamins in future labels.

*Potato Crisps, Sample No. N.7340.*

Although no exception was taken to the label on the packet containing this informal pre-packed sample, an unsatisfactory advertisement relating to the Crisps was published in a periodical. This gave an analysis which included the amounts of Vitamins B and C present, the declaration simply stating "Vitamin B 24.1 Units" and "Vitamin C 27.1 Units." It will be noted that the figures are not related to any specific amount of the crisps. Furthermore, Part I of the Second Schedule of the Labelling of Food Order requires the amounts of both these vitamins to be expressed in the form of milligrammes per ounce and not as units. The suggested Code of Practice for claims with regard to vitamins published by the Ministry of Food in the year 1945 stated that no claim should be made unless at least one-sixth of the daily requirement of the vitamin was present in the amount of the food that would ordinarily be consumed in one day. The daily requirements of Vitamin B<sub>1</sub> was given as 300



International Units and that of Vitamin C as 30 milligrammes (a figure suggested later was 20 milligrammes). Assuming two of the one ounce packets of the crisps to be eaten in one day, and assuming that the declaration on the packet related to one ounce of the crisps, the declared amount of Vitamin B content would barely justify the claim of its presence while that of Vitamin C was appreciably below the minimum required to justify the claim. Upon analysis, however, the amount of Vitamin B<sub>1</sub> found corresponded to only 11·7 Units per ounce (*i.e.* about half the amount claimed) while the Vitamin C content was found to be 32 Units per ounce (*i.e.* more than the amount claimed). The manufacturers were communicated with in regard to both the incorrect form of the declarations and the deficiency in Vitamin B<sub>1</sub> and they undertook to amend future advertisements.

*Icing Sugar, Sample No. E.9125.*

This pre-packed sample bore a label on which, besides the words Icing Sugar, there appeared the statement "Sugar, containing lemon edible colour and flavour," the word "lemon" being in very much heavier and larger type than the other words. On a separate part of the label there was also a declaration that an amount of calcium phosphate not exceeding 1·5 per cent. had been added. No evidence of the presence of any lemon or lemon juice was found upon analysis. The packers were communicated with and it was pointed out to them that the list of ingredients declared on the label should be complete and in the correct order, *i.e.*, the ingredient present in greatest amount being declared first, and that any qualifying words in the description should be in the same size print, *i.e.* the word "lemon" should not be in heavier print than the words which indicated that the ingredient was lemon flavour and not actual lemon. This sample must have been taken from very old stock as the packers stated that the label in question had been discontinued since December, 1955 following similar representations made by another food and drugs authority.

*Ice Cream, Sample No. E.9605.*

This prepacked sample bore a label which stated "made with Butter, Sugar, Eggs, Full Cream Milk Powder." On the other hand, a display placard stated "made with Eggs, Butter, Full Cream Milk." It will be noted that these declarations are not identical and, furthermore, that in the second declaration the ingredient "eggs" is declared first while in the other declaration "eggs" is next to the last ingredient. Bearing in mind that a list of ingredients (even if a voluntary declaration in respect of a product, such as ice-cream, which is exempted by reason of Table C

of the First Schedule of the Labelling of Food Order from the requirement to declare a list of ingredients) could be held to be misleading if not stated in the correct order, *i.e.*, the ingredient present in greatest proportion being declared first ; it follows that at least one of the above declarations is incorrect and could give a wrong impression of the relative proportions of ingredients used. Upon analysis it was found that butter, sugar and full cream milk powder were each present in approximately equal amounts, *i.e.*, approximately 14 per cent. each, whereas it was found that the liquid whole egg content was not more than four per cent. It follows, therefore, that both the declarations were incorrect and that the word "eggs" should have appeared last. The packers were communicated with and they stated that the wording was originally done from the point of view of general advertising and that they had not considered it in relation to the Food and Drugs Act. They agreed to amend the wording on their cartons and advertisements.

*Chopped Chicken, Sample No. C.8845 and Boneless Turkey, Sample No. S.9277.*

These two informal pre-packed samples are discussed together because the points at issue are the same in both instances. The first of the samples was described simply as "Chopped Chicken" but the list of ingredients on the label stated "Chicken, Bouillon, Salt." Upon analysis the sample was found to contain approximately 80 per cent. of chicken and 20 per cent. of added water in the form of stock or jelly. Similarly, the second sample was described simply as "Boneless Turkey" and the ingredients were listed as "Turkey, Stock, Gelatine, Salt, Flavouring." In this latter sample, 14 per cent. of added water was present. The Labelling of Food Order requires a prepacked food to be labelled with the common or usual name of the food together with a correct list of ingredients but section 6 (5) of the Food and Drugs Act states that a correct declaration of composition does not preclude a label from otherwise being false or misleading. Your Analyst considers that the names applied to both these samples might be misleading and that they would be better described as "Chopped Chicken in Chicken Stock" or "Chopped Chicken in Chicken Jelly" and "Boneless Turkey with Stock." The manufacturers of both samples were communicated with and in respect of the first sample it was ascertained that, as the result of representations by another Food and Drugs Authority, steps had already been taken to amend the label. The manufacturers of the turkey product referred the matter to their Trade Association who at first suggested that "Boneless Turkey in Natural Juices" would be an adequate description. Your Analyst, however, indicated that in his view it would be misleading to describe excess water as natural juices and after further correspondence



between the manufacturers and their Trade Association it was agreed that the word "Stock" should be included in the actual description of the product.

*Double Lemonade, Sample No. E.9662.*

This sample of mineral water was found upon analysis to contain 0.015 per cent. saccharin, whereas the maximum limit for saccharin in mineral waters prescribed by the Food Standards (Soft Drinks) Order, 1953, corresponds to only 0.0117 per cent. The composition of the sample in all other respects corresponded to that of an ordinary mineral water and there did not appear to be any justification for applying to it the description "Double Lemonade." It is, of course, a contravention of the Food Standards (Soft Drinks) Order to add more than the prescribed amount of saccharin to any particular type of soft drink, irrespective of the name under which it is sold. The manufacturers were communicated with and they stated that the excess of saccharin was an error which had now been corrected. Furthermore, with regard to the description under which the product had been sold they agreed to revert to the use of a normal lemonade label.

*Fresh Orange and Glucose Drink, Sample No. E.9713.*

This soft drink for consumption after dilution bore on the label a list of ingredients which stated "Dextrose approx. 15%, Fresh Orange Juice, Citric Acid, Saccharin." The makers claimed that it was a glucose beverage as defined in the Soft Drinks Order and was, therefore, exempt from the standards prescribed by that Order. This exemption implies, however, that glucose beverages become liable to the general requirements of the Labelling of Food Order to declare a correct list of ingredients on the label. Upon analysis it was found that the composition of the sample included approximately 35 per cent. of orange juice, 24 per cent. of invert sugar, two per cent. dextrose and permitted sulphite preservative and artificial colouring matter. Furthermore, the amount of Vitamin C present was only 0.4 milligramme per fluid ounce, a negligible quantity. The manufacturers were communicated with and it was pointed out that the word "fresh" applied to the orange juice ingredient, was not appropriate in view of the absence of any significant amount of Vitamin C and the fact that the commodity contained a preservative. Furthermore, it was pointed out that the list of ingredients on the label was neither complete nor in the correct order. The orange juice content should be declared first; the dextrose content claimed was derived mainly from invert sugar (which contains equal proportions of dextrose and fructose) yet no mention was made in the list of ingredients of the presence of fructose. The presence of sulphur dioxide and colouring should also be declared.



After discussion with the Head Chemist of the firm, the manufacturers agreed to delete the word "fresh" and to include a correct list of ingredients on the label.

*Lemon, Dilute to taste, Sample No. E.9799.*

This informal sample bore on the label the description "Lemon" and the words "dilute to taste" and "containing the actual fruit juice." In the opinion of your Analyst the description "lemon" does not indicate to a purchaser the true nature of the drink; in particular, whether it is actual fruit juice or merely a soft drink containing only a proportion of fruit juice. Upon analysis the sample was found to have the normal composition of a soft drink made for consumption after dilution and it contained approximately 32 per cent. of lemon and lemon juice. The packers of the commodity were communicated with and informed that it should be labelled "Lemon Squash" to indicate its true nature; they immediately agreed to amend existing labels.

#### ICE-CREAM.

The first Standards Order for ice-cream was made in March, 1951, but due to shortages of fats and milk powder it was soon found impossible to maintain the standard then formulated without reducing supplies of ice-cream. The Minister of Food, therefore, introduced, as a temporary measure, reduced standards for fat and milk solids other than fat in July, 1952. During the year 1953, the supply position improved and the Food Standards (Ice-Cream) Order, 1953, which came into operation on the 1st June, 1953, restored the original standard fixed in the year 1951. This standard is still in operation today and is as follows:—

" 1. Ice-cream shall contain not less than five per cent. fat, 10 per cent. sugar and  $7\frac{1}{2}$  per cent. milk solids other than fat:

Provided that—

(i.) ice-cream containing any fruit, fruit pulp or fruit puree shall either conform to the standard set forth above or, alternatively, the total content of fat, sugar and milk solids other than fat shall be not less than 25 per cent. of the ice-cream including the fruit, fruit pulp or fruit puree, as the case may be, and such total content of fat, sugar and milk solids other than fat shall include not less than  $7\frac{1}{2}$  per cent. fat, 10 per cent. sugar and two per cent. milk solids other than fat:

(ii.) 'Parev' (kosher) ice sold, offered or exposed for sale under that description shall contain not less than 10 per cent. fat and not less than 14 per cent. sugar, and the standard for ice-cream set forth above shall not apply to this product.

“ 2. For the purpose of the standards prescribed above ‘ sugar ’ means sucrose, invert sugar or the solids of any sweetening material derived from starch so however that no ice-cream shall contain less than  $7\frac{1}{2}$  per cent. sucrose.

“ 3. Each reference in this Schedule to any proportion or percentage means that proportion or percentage by weight.”

When the above standard was first introduced in 1951 the Food Standards Committee of the Ministry of Food stated that it was not ideal and that it should be amended and improved as supplies of ingredients became more plentiful. In December of the year under review a report of the Food Standards Committee on the Ice-Cream standard was published in which the Committee recommended, in view of present day conditions and current commercial practice, that the Food Standards (Ice-Cream) Order, 1953, should be amended as follows :—

(a) To provide that the description “ dairy ice-cream ” (and variants likely to suggest the use of dairy ingredients) may only be applied to ice-cream in which the whole of the fat content is milk fat.

(b) To provide a standard for “ milk-ice ” of not less than  $2\frac{1}{2}$  per cent. of milk fat, not less than seven per cent. of milk-solids-not-fat and no fat other than milk fat.

(c) To revoke the present provisions relating to the sugar content of ice-cream but to include a prohibition on the use of saccharin and other artificial sweetening agents in ice-cream (including that containing fruit), milk-ice and “ Parev ” (Kosher) ice.

(d) To prohibit the use of milk or milk products in “ Parev ” (Kosher) ice.

In addition to the above recommendations the Food Standards Committee is investigating the possibility of including in the standard a provision relating to overrun *i.e.*, the increase in volume of the ice-cream which occurs during freezing due to the whipping in of air. This increase in volume is expressed as a percentage of the original volume of the mix and may be from 20 to 100 per cent., or even more. Ice-cream is sold by volume although the present standard is based on weight. It follows that the food value of the ice-cream as purchased in the frozen state depends not only on the standard but also on the degree of overrun. While no standard for ice-cream which ignores the question of overrun can be regarded as complete the Committee feel that they are not satisfied, at present, that a provision for the measurement of overrun could be properly enforced ; particularly in regard to the taking of a divided sample and the keeping of the various portions in their original state. In respect of the third part of the sample this might entail storage for several months. Until their investigations show that the problem of



overrun can be satisfactorily dealt with, the Committee feel that no change should be made in the present standards for the fat content and the milk-solids-not-fat content of ice-cream.

It will be noted from table 26 that the average fat content of ice-cream during the year under review has decreased by 0.5 per cent. when compared with the previous year but the general improvement in the fat content of ice-cream found over the last nine years, is still maintained. A perusal of the table shows that the average fat content in 1946 was only 2.3 per cent. whereas for the years 1954 and 1956 it was 9.2 per cent. and for 1957 it was 8.7 per cent. Furthermore, the lowest fat content during 1956 was 3.6 per cent. and in 1957, 3.0 per cent. ; whereas in the four years 1946 to 1949 fats as low as 0.3 and even 0.1 per cent. were found. Table 26 shows the results for all samples of ice-cream examined in the County Laboratory whether submitted by County Sampling Officers or by Autonomous Food and Drugs Authorities. A further rather interesting point emerges if the samples are subdivided into those submitted by the County and those submitted by Autonomous Authorities ; when the average fat content of County samples for the year is found to be 7.4 per cent., while the average figure for the Autonomous Food and Drugs Authority samples is 10.0 per cent. The difference in the figures is almost certainly due to a greater proportion of samples having been obtained from small makers in the County area than in the Autonomous areas. Generally speaking, the small manufacturer uses an ice-cream mix containing less fat by weight but at the same time his product usually has far less overrun than that of the big manufacturer. As already indicated this difference in overrun in a commodity sold by volume tends to cancel out the difference in fat content of the two types of ice-cream.

The average fat content of ice-cream has increased in a striking manner since 1946, but the increases noted since 1948 were, in the first place, due to the action of the Ministry of Food in allocating from November, 1948, additional supplies of sugar, and in certain cases fats, to those ice-cream manufacturers who, at that time, undertook to include at least 2.5 per cent. fat in their ice-cream. This step to increase the quality of ice-cream was taken more than two years before the first statutory standard for ice-cream was made.

During the year, 1957, 99 samples of ice-cream were submitted for chemical analysis, 50 by County Sampling Officers and 49 by Autonomous Food and Drugs Authorities. Although no harmful ingredients were found in any of the samples, 13 (11 County and two from Autonomous Authorities) were reported upon adversely, 12 did not comply with the Food Standards (Ice-Cream) Order and one had an unsatisfactory label. In the year, 1956, seven samples were reported upon adversely. Of the 11 unsatisfactory County samples, seven were deficient in fat, one deficient



in sugar and milk solids other than fat, one deficient in milk solids other than fat, one deficient in sugar and one labelling offence. The two unsatisfactory samples from Autonomous Authorities were both deficient in fat. Details of the incorrect County samples, together with the action taken, will be found in table 25. From an examination of this table it will be seen that sample No. C.7966 had a fat deficiency of 40 per cent. Legal proceedings, under Section 2 of the Food and Drugs Act, 1955, were instituted against the vendor who was fined £10 and £5 19s. costs. The sample, No. E.9605, which had an unsatisfactory label is discussed in the section of this report dealing with the Labelling of Food Order.

The average figures found for the 99 samples were—total solids 33·3 per cent. (maximum 41·9 ; minimum 22·9) and for fat content 8·7 per cent. (maximum 14·7 ; minimum 3·0). These figures, as will be seen from the following table, which includes figures for the last 12 years, show that the big improvement noted in the year 1950 has been maintained. It will be remembered that prior to the war a figure of eight per cent. was suggested by a trade association as a minimum standard for fat content and it is interesting to note that during the year under review, 56 samples out of the total of 99 showed fat contents varying from 8·1 to 14·7 per cent.

*Table 26.*  
*Ice-Cream.*

YEAR.	Number of Samples	Fat Content Average %	Total Solids Average %	Highest Fat %	Lowest Fat %	Highest Total Solids %	Lowest Total Solids %
1946	45	2·3	22·5	10·7	0·1	36·8	13·3
1947	59	3·0	23·6	10·6	Less than 0·1	39·2	14·1
1948	53	3·9	25·3	11·3	0·1	33·4	18·9
1949	171	6·4	29·3	13·3	0·3	45·9	14·7
1950	186	8·5	32·1	14·7	2·2	43·0	20·1
1951	230	8·6	32·6	15·6	3·3	40·7	23·0
1952	143	9·0	32·8	13·7	2·0	40·0	19·6
1953	130	8·6	32·7	15·2	2·5	42·3	23·3
1954	90	9·2	34·6	13·8	3·1	44·0	24·8
1955	95	8·1	33·2	13·3	3·5	40·9	24·3
1956	94	9·2	34·0	16·4	3·6	43·6	26·3
1957	99	8·7	33·3	14·7	3·0	41·9	22·9

## ICE LOLLIES.

During the year under review 19 samples of ice lollies were submitted for examination under the Food and Drugs Act. Nine of the samples were submitted by County Sampling Officers, the remaining 10 samples being from an Autonomous Food and Drugs Authority. Unlike ice-cream there is no statutory standard for the composition of ice lollies. They are specifically excluded from the provisions of the Food Standards (Ice-Cream) Order while the Food Standards (Soft Drinks) Order refers only to liquid soft drinks although ice lollies are, in general, similar in composition to soft drinks. Ice lollies and ice-cream are, however, both specifically mentioned in the revised reports on lead and arsenic of the Food Standards Committee of the Ministry of Food which were published in the years 1954 and 1955 respectively. In these reports maximum limits of only one part per million for lead and 0.5 part per million for arsenic (as As) are recommended for both types of commodities. The limits for the majority of other foods being two parts per million and one part per million respectively. In addition to the special recommended limits for lead and arsenic referred to above there are also general recommended maximum limits for two other toxic metals in foods, *viz.*, copper 20 parts per million and zinc 50 parts per million. All the samples of Ice Lollies submitted during the year 1957 were found upon examination to comply with the foregoing recommendations. Exception was, however, taken to four County samples which were not correctly labelled. Details of these will be found in table 25.

The total solids (sugars, etc.) in the samples ranged from as little as 2.1 per cent. to 24.9 per cent. with an average for the 19 samples of 11.5 per cent. The average total solids on 23 samples examined in the previous year was 9.1 per cent. while the range of total solids obtained in the years 1952, 1953, 1954, 1955 and 1956 were very similar to the figures given above for the year under review.

## SAUSAGE, MEAT PASTE AND FISH PASTE.

On the 1st March, 1953, the last of the Meat Products Orders was revoked and this had the effect of removing all restrictions, for control purposes, on the price and composition of both pork and beef sausages. It should be noted, however, that the Orders mentioned above were made by the Minister of Food for the purpose of controlling the sale of certain commodities which were, or had been, in short supply. In view of the increased supplies of meat available subsequent to February, 1953, it would appear reasonable to expect that sausages should now have at least the same meat content as in the days of control and short supply and successful prosecutions were instituted by the County, in the years 1953,



1954 and 1955, following the revocation of the Meat Products Orders, in respect of samples of pork sausages found to be seriously deficient in meat. In these cases taken under Section 3 of the Food and Drugs Act, 1938, the Courts accepted the opinion of your Analyst that genuine pork sausage must contain not less than 65 per cent. of meat.

During the year 1956, however, the position was rendered difficult by the results of two Appeal cases in which the judgments went against the prosecution. In the case of *Marston v. Loney* heard in October, 1955, the standard suggested by the Public Analyst was based on the standard previously fixed under the Meat Products Order which had by then been revoked. No other evidence as to a standard was given. In the other case of *Thrussell v. Whiteman* in January, 1956, the Lord Chief Justice said "The sooner it is seen that these cases lead to chaos and it is prescribed what a sausage is the better," he also thought that it depended on the price. This last is quite a new concept in deciding whether a particular food is genuine and up to standard so far, at least, as the Food and Drugs Act is concerned. While successful prosecutions have been taken by some Food and Drugs Authorities subsequent to the above Appeal cases there is no doubt that it is now difficult to obtain convictions particularly in the case of sausages which are relatively cheap in price.

In view of the position described in the previous paragraph it was gratifying to find that the Food Standards Committee of the Ministry of Agriculture, Fisheries and Food after hearing evidence from all branches of the sausage trade and from organisations concerned with the enforcement of food and drugs legislation, recommended, in a report published in June, 1956, that statutory standards should be fixed for sausages. The recommendations included: (a) a minimum standard of 65 per cent. meat for sausages made wholly or mainly with pork and 50 per cent. meat for all other meat sausages; (b) the proportion of fat not to exceed 50 per cent. of the total meat content; (c) the standards to apply to uncooked sausages, sausage meat, skinless sausages, chipolatas and slicing sausages; (d) the sale of sub-standard sausages to be prohibited. The majority of the Food Standards Committee considered that the description "Pork Sausage" and "Beef Sausage" should apply where at least four-fifths of the meat content consisted of the named meat but some members of the Committee considered that these names should only apply when the whole of the meat content consists of the named meat. The Committee also recommended that at least one-and-a-half pounds of sausage should be purchased when it was intended to obtain a divided sample for analysis. The report also contains tables which show the variation in price and meat content of pork and beef sausages over the previous three years and the distribution of some 11,000 samples grouped in regard to price and meat content. The figures which are based on the



results of samples analysed by Public Analysts throughout the country show that there is no significant relationship between price and meat content.

The last Meat Products Order, revoked on the 1st March, 1953, in addition to controlling price and meat content, also prohibited the use of certain specified offals in the preparation of sausages and other uncooked open meat products intended for human consumption. The restriction on the use of these offals was re-enacted in the Offals in Meat Products Order, 1953, which came into operation on the 1st March, 1953, and this Order provided that proceedings for an infringement might be brought by a Food and Drugs Authority without the consent of the Minister of Food. The Food Standards Committee in their report on sausages recommend that this Order be retained.

The compositions of meat paste and of fish paste are controlled by the Food Standards (Meat Paste) Order, 1951, and the Food Standards (Fish Paste) Order, 1951. The standard for meat paste is a minimum of 55 per cent. meat and for fish paste a minimum of 70 per cent. fish. The standards apply to both imported and home produced products.

During the year 1957, 109 samples of sausage, one of sausage meat, seven of canned sausage, one Cumberland, two Frankfurt, five Liver, one Ulster Fry, one Worst, one Salami, one Luncheon, one Tomato, one Canned with Beans and one Meatless, canned, were examined as against 102 samples of sausage, two of sausage meat and one of canned sausage in the previous year. Eighty-six samples were examined for the County (including one sausage meat, five Canned, one Cumberland, one Frankfurt, five Liver, one Ulster Fry and one Worst) and 46 (including two canned, one Salami, one Meatless, canned, one Luncheon, one Frankfurt, one Tomato and one Pork Sausages with Beans, canned, for Autonomous Food and Drugs Authorities. Of the total number of sausage samples submitted during the year under review 47 consisted of Beef and 63 of Pork (including one sausage meat). Twenty-one County samples and 10 submitted by other Food and Drugs Authorities were reported upon adversely. A perusal of table 25 will show that while 12 of the County samples were poor in meat content, 10 of these were not seriously deficient. Fifteen of the samples examined, including 11 County samples, contained normal amounts of sulphite preservative but without any declaration of the presence of preservative being stated on the label or exhibited in the shops concerned. This is contrary to the requirements of the Public Health (Preservatives, etc., in Food) Regulations, 1925-1953. In addition, two County samples contained an excess of declared preservative, of 80 and 165 parts per million sulphur dioxide respectively, above the permitted limit. Details of all the adulterated County samples, together with the action taken, will be found in table 25.



It is interesting to note that the average meat content of 47 samples of beef sausage examined in the County Laboratory during the year 1957 was 58·3 per cent., while the average meat content of 62 samples of pork sausage examined over the same period was 65·5 per cent. Bearing in mind that the standards before the 1st March, 1953, under the Commodity Control Order, were a minimum of 50 per cent. meat for beef sausage and beef sausage meat and a minimum of 65 per cent. meat for pork sausage and pork sausage meat, the average figure obtained in the County Laboratory during the year 1957 for beef sausages is very satisfactory. In fact of 47 samples of beef sausage only four contained less than 50 per cent. meat. With regard to pork sausage the average results are also satisfactory although there is a decrease of 1·8 per cent. on the results obtained in the previous year. It will be remembered that the average meat content for 63 samples submitted during the year 1956 was 67·3 per cent. Of the 62 samples of pork sausages submitted during the year 1957, 16 (or 26 per cent.) contained less than 65 per cent. meat. Although this cannot be regarded as satisfactory it must be emphasised that it cannot be assumed that the position with regard to pork sausage has deteriorated since control was removed at the beginning of the year 1953. Fifty per cent. of the pork sausage samples submitted in each of the years 1951, 1952 and 1953 were reported upon adversely and the proportions of unsatisfactory samples for the years 1954, 1955 and 1956 were 39 per cent., 24 per cent., and 32 per cent. respectively.

Fourteen samples of meat paste (11 submitted by County Sampling Officers and three by Autonomous Authorities) were examined during the year and all were found to be satisfactory.

With regard to fish paste, 29 samples (19 County) were submitted for examination during the year and, of these, four (two County and two from Autonomous Authorities) were reported upon adversely. A formal County sample No. E.8953 was found to be deficient of 71 per cent. of the minimum percentage of fish. A prosecution under Section 2 of the Food and Drugs Act, 1955, was instituted against the vendors who were fined £10 and £4 18s. costs. The other unsatisfactory County sample, No. E.9856, taken informally and submitted as Salmon Paste, was found to consist of Fish Paste (salmon). The vendor was cautioned and his attention drawn to the Code of Practice governing the labelling of fish pastes. Of the two informal samples received from Autonomous Authorities which were reported upon adversely, one was submitted as salmon paste and on examination was found to consist of fish paste made with white fish and the other sample, submitted as salmon paste, was found to consist of fish paste (salmon). A formal sample of the first of the two



unsatisfactory samples submitted by Autonomous Food and Drug Authorities was not obtainable and the vendor of the other sample was cautioned and is now labelling the product correctly.

### FRESH FRUIT.

In previous reports, attention has been directed to the necessity which now exists for examining fresh fruit for added chemicals. This arises mainly from the extensive use of insecticidal sprays by growers and of anti-mould agents by packers for the purpose of ensuring better crops and the marketing of sound produce. It is one of the duties of the Public Analyst to see that no harmful quantity of any chemical residue remains on fruit or other food when it is offered for sale and that existing regulations are complied with ; in particular, the Public Health (Preservatives, etc., in Food) Regulations and the Mineral Oil in Food Order. With this in view the staff of the County Laboratory during the year under review has continued to examine samples of apples, etc., for excessive amounts of lead and arsenic which might arise from the use of lead arsenate sprays and samples of citrus fruits for thiourea, diphenyl, boron preservative and mineral oil.

During the year 1957, 48 samples of fresh fruit were examined in the County Laboratory, of these 33 were submitted by the County Sampling Officers and 15 by Autonomous Food and Drugs Authorities. In addition, two samples of fresh tomatoes were examined for an Autonomous Food and Drugs Authority. The samples consisted of the following varieties of fruit : 22 Apples, 2 Pears, 16 Oranges, 6 Lemons, 1 Grapefruit and 1 Tangarines. Five samples were reported upon adversely ; these consisted of two samples of Apples and a sample of Pears submitted by County Sampling Officers and a sample of Apples and a sample of Lemons submitted by Autonomous Food and Drugs Authorities. Samples Nos. S.8535 and S.8566 consisted of two samples of one delivery of imported Apples taken from a retail shop. The lead content of individual apples in the two samples varied from 2.6 to as much as 20.5 parts per million while the arsenic content (as As) varied from 0.9 to 5.4 parts per million. The normal recommended limits are two parts per million for lead and one part per million for arsenic. The apples concerned were badly bruised and were withdrawn from sale by the Local Authority. In addition, the importers, the Ministry of Agriculture, Fisheries and Food and the Port Health Authority of the port of importation were all communicated with in regard to the lead and arsenic content of the apples. In the reply from the Ministry it was intimated that consideration was being given to the implementation of the recommendations of the Food Standards Committee as to the limits for lead and arsenic in foods. A sample



of apples submitted by an Autonomous Food and Drugs Authority was found upon analysis to contain seven parts per million of lead and two parts per million of arsenic. The remainder of this stock was cleansed and then released for sale and the Port Health Authority informed. A sample of Pears, No. E.9069, was found to contain 2.2 parts per million of lead and 0.8 part per million of arsenic. No action was advised in regard to this borderline sample. Finally, a sample of unwrapped Lemons submitted by an Autonomous Food and Drugs Authority had been packed in a crate, the brown paper liner of which was found to contain 980 milligrammes of diphenyl per 100 square inches of paper but the two lemons submitted only contained 1.5 and 1.1 milligrammes of diphenyl respectively. The Public Health (Preservatives, etc., in Food) Regulations, 1925 to 1953, permits the presence of diphenyl in citrus fruit in consequence of it being wrapped outside the United Kingdom in wrappers treated with not more than 40 milligrammes of diphenyl per 100 square inches. Larger amounts of diphenyl than those present in the lemons submitted are found in citrus fruits wrapped in individual wrappers impregnated with the permitted amount of diphenyl. Under these circumstances no further action was taken in respect of this technical infringement of the regulations. The two samples of fresh tomatoes were examined for the presence of parathion in addition to being examined for arsenic, metals, thiourea and diphenyl but all were found to be absent.

#### SOFT DRINKS AND FRUIT JUICES.

In December of the year 1953 most of the controls previously exercised by the Minister of Food in respect of soft drinks were revoked. The Standards for soft drinks, however, in regard to their fruit juice, sugar, saccharin, etc., contents, which were previously incorporated in the Soft Drinks Order, 1947, were continued with minor alterations in the Food Standards (Soft Drinks) Order, which came into operation on the same date that the other controls ceased. There were no amendments to the Standards Order during the year 1957.

The Food Standards (Soft Drinks) Order, 1953, incorporates the following provisions which were previously covered by licences issued by the Ministry of Food: medicated drinks conspicuously and properly labelled as such and glucose beverages which contain not less than 23 per cent. weight in volume of liquid glucose, or alternatively not less than 10 per cent. weight in volume of dextrose monohydrate, are exempt from the standards prescribed in the Order. Soft drinks clearly labelled that they are intended for consumption by diabetics are also exempt from the standards in so far as sugar and saccharin content are concerned. Ginger beer and other herbal beers are included in the standards but allowance may be made for any loss in sugar content due to



brewing. Specific references to non-alcoholic wine, non-alcoholic cider and non-alcoholic perry do not appear in the Standards Order but these presumably are covered by the general heading "Any other description of soft drink containing fruit juice." Drinks made from whole fresh oranges are described as such in the Standards Order and not as "squash made from whole fresh oranges" which was the previous description.

A further exemption from the provisions of the Standards Order was introduced by the Food Standards (Soft Drinks) (Amendment) Order, 1954, which came into operation on the 22nd August, 1954. Prior to that date fruit juice was only exempted from the requirements of the Standards Order when in a pure undiluted condition; this exemption has now been extended to include all undiluted fruit juice, with or without added sugar, and any such juice in a concentrated (or frozen) form.

During the year 1957, 51 samples of soft drinks have been examined, including seven samples submitted from Autonomous Food and Drugs Authorities. The total number of samples under this heading submitted during the previous year was 26. Included in the total for the year under review were 13 samples of various types of mineral waters, 12 samples of soft drinks for consumption after dilution (squash, etc.), 18 samples of orange and other fruit drinks in one-third pint bottles, five glucose drinks and three non-alcoholic beverages. In addition, one tomato juice cocktail and six soft drink powders and crystals were examined but these do not come within the Statutory definition of "soft drink."

Of the above, eight County samples were reported upon adversely. An informal sample of a soft drink to be diluted, No. E.9799, was labelled simply "Lemon" but was found to consist of a soft drink containing approximately 32 per cent. lemon and lemon juice. The packers were communicated with and they agreed to label this commodity as a lemon squash. Informal sample No. N.7772, Pineappleade, was found to contain 90 parts per million of sulphite preservative (expressed as sulphur dioxide), whereas the limit for sweetened mineral waters is 70 parts per million. This excess preservative was caused by one of the bottler's assistants who, after syringing a small batch of Pineappleade, had about one-and-a-half ounces left over and rather than throw this away she put a little extra syrup into about three bottles and in so doing had increased the sulphur dioxide content. The packers took steps to prevent a similar occurrence in future. Sample No. E.9662, Double Lemonade, taken informally contained 0.015 per cent. saccharin. The maximum limit of the Food Standards (Soft Drinks) Order corresponds to 0.0117 per cent. saccharin. The composition of this sample otherwise corresponded to ordinary lemonade and yet was described as "Double Lemonade." The packers agreed to correct the saccharin content and to revert to a normal lemonade label. Sample No. N.6693, which consisted of a partly filled



one-third pint bottle of Orange Drink ready for consumption, was found to contain fragments of broken glass weighing in all 4.39 grammes. Legal proceedings, under Section 2, of the Food and Drugs Act, 1955, were instituted against the packers who were fined £25 and £4 18s. costs. Sample No. E.8590, Orange Drink ready for consumption, contained 0.018 per cent. Saccharin, *i.e.*, approximately 0.006 per cent. in excess of the permitted limit of 0.0117 per cent. The manufacturers were communicated with and undertook to pay particular attention to the mixing of the concentrates used in future. Sample No. E.9916, Orange Drink, contained one large and several minute fragments of broken glass weighing in all 1.518 grammes. Legal proceedings, under Section 2 of the Food and Drugs Act, 1955, were instituted against the packers who were fined £5 and £20 11s. costs. Sample No. E.3728, Morning Fruit Drink, was found to contain a piece of used chewing gum. Legal proceedings, under Section 2 of the Food and Drugs Act, 1955, were instituted against the packers who were fined £2 and £8 costs. The remaining sample, No. E.9713, Fresh Orange and Glucose Drink, to be diluted, had an incomplete list of ingredients in the wrong order, *i.e.*, there was more orange juice present than dextrose although the latter was placed first in the list. The contents were claimed to include "Fresh Orange Juice" whereas a preservative was present and the Vitamin C content was negligible. The word "fresh" should, therefore, be omitted. The dextrose was derived mainly from the invert sugar which consists of equal amounts of dextrose and fructose yet no mention of the presence of fructose was made on the label. A representative of the packers was interviewed and it was subsequently agreed by the packers to alter the label of this commodity. Six of the above eight unsatisfactory samples are referred to in more detail in the Sections of this report dealing with the Labelling of Food Order and with samples containing extraneous matter.

Although fruit juices do not come within the provisions of the Food Standards (Soft Drinks) Order it is convenient to mention them here. During the year 1957, 26 samples (18 County) of fruit juice, either bottled or canned, were examined in the County Laboratory; in addition, two samples of tomato juice were also examined. The 26 samples of fruit juice included four of orange juice, five lemon juice, 11 pineapple juice, one blackcurrant juice, three grapefruit juice, one apple juice and one raspberry juice. Of these, one County sample, No. E.8394, Apple Juice, was found to be turbid and contained a deposit (0.3 gramme) of tannins, etc., which rendered the product unsightly. The packers were communicated with and they stated that the sample was from old stock and that they had arranged for their representative to check the retailer's stock and to withdraw any remaining bottles of that batch from sale. One sample of Orange Fruit Juice submitted by an Autonomous Authority



was found to be a soft drink containing only 10·5 per cent. orange. The circular which accompanied this sample was, in your Analyst's opinion, misleading in that, in addition to describing the commodity as pure orange juice, the word " glucose " was given priority to the word " sugar " implying the presence of more glucose than sugar whereas the amount of added glucose actually present was relatively small compared with the amount of added sugar (sucrose) present. A further formal sample of this commodity was unobtainable.

#### THE FLOUR (COMPOSITION) REGULATIONS, 1956.

It will be remembered that the Flour Order, 1953, ended the control of flour mills but it stipulated that, with the exception of (1) flour containing the whole of the products derived from the milling of wheat or (2) flour which is the subject of a licence granted by the Minister of Food, all other flours must contain certain compulsory additions. It was obligatory to add to all flour (with the two exceptions noted above) Creta Praeparata, of British Pharmacopoeia or British Pharmaceutical Codex quality and of a prescribed fineness, to the extent of 14 ounces per 280 lbs. flour, *i.e.*, at the same rate at which this substance was incorporated in National flour. In addition to the above, other substances were to be restored to flours of an extraction rate less than 80 per cent., *i.e.*, to white flours of an extraction rate less than that of National flour. These new ingredients were Iron, Vitamin B<sub>1</sub> and Nicotinic acid and they had to be added in sufficient quantity to ensure total minimum contents of 1·65, 0·24 and 1·60 milligrams respectively per 100 grams of the flour. The three important nutrients mentioned are present naturally to the recommended amounts in flour of 80 per cent. extraction but when the extraction rate is reduced below 80 per cent., to give a whiter flour, the content of these nutrients is also reduced ; they must, therefore, be restored artificially if the nutritional value of the flour is to be unimpaired. The Flour Order was enforced centrally by the Ministry of Food but Food and Drugs Authorities were requested to refer to the Ministry details of any samples which did not conform with the requirements indicated above. An amendment to the Labelling of Food Order which came into operation on the 1st January, 1954, permits flour to be sold without a declaration on the label of the compulsory additions which, under the Flour Order, are required to be present.

The Flour Order, 1953, was revoked on the 30th September, 1956, when the bread subsidy was abolished. On the same day, however, the Flour (Composition) Regulations came into operation and these have the effect of re-enacting with certain modifications the requirements as to



composition contained in the previous Order and they make Food and Drugs Authorities now responsible for the enforcement of the Regulations. Apart from certain specified exceptions all flour (except flour containing the whole of the products derived from the milling of wheat) must now contain Creta Praeparata of a specified fineness in an amount between 235 to 390 mgms. per 100 grams of flour. In addition, all flour is also required to contain the three other nutrients in the amounts previously prescribed, *i.e.*, Iron not less than 1.65 mgms. per 100 grams, Vitamin B<sub>1</sub> not less than 0.24 mgms. per 100 grams and Nicotinic acid or Nicotinamide not less than 1.60 mgms. per 100 grams. These nutrients must be added (when addition is necessary) in the case of Iron as reduced Iron or ferric ammonium citrate and, in the case of Vitamin B<sub>1</sub>, Nicotinic acid and Nicotinamide, in a form conforming to the standards of the B.P. or B.P.C. These new Regulations implement the Government's decision to accept the main conclusions in the report of the Panel on the Composition and Nutritive Value of Flour which was published on the 17th May, 1956. The Regulations, however, only cover the points which have been enumerated above and further Regulations may ultimately be considered necessary. With this in mind the Ministry of Agriculture, Fisheries and Food together with the Ministry of Health and the Department of Health for Scotland published a Press notice on the 7th August, 1956, in which they stated that the Food Standards Committee had been invited to give consideration to other aspects of the composition of both flour and bread.

During the year under review 49 samples of plain flour (46 County) were submitted for examination. In addition, 58 samples of self-raising flour (43 County and 15 from Autonomous Authorities) were also examined.

Of the 49 samples of flour, seven County samples were reported upon adversely ; four were deficient in Creta Praeparata ; two contained excess Creta Praeparata and one was deficient in Creta Praeparata and Iron. The irregularities found in four of the samples were only slight and no action was advised. With regard to the three remaining samples, No. E.8397 contained 480 milligrammes Creta Praeparata per 100 grammes of flour, *i.e.*, an excess of 90 milligrammes above the permitted limit. The millers concerned were communicated with and adjustments were made to the mixing equipment. No. N.6953 contained only 47 milligrammes of Creta Praeparata per 100 grammes of flour. In this case the millers gave an assurance that every care would be taken to ensure that their flour complied with all statutory requirements. Sample No. E.3713, taken from a school kitchen, was found to contain only 82 milligrammes of Creta Praeparata per 100 grammes of flour. The millers were informed of this result and they gave an assurance that everything possible would be done to prevent any recurrence in future.

Self-raising flour is required under the Food Standards (Self-Raising Flour) Order, 1946, to yield not less than 0·40 per cent. of available carbon dioxide and it is interesting to note that the 58 samples examined during the year 1957 all complied with this standard.

Details of all the County samples reported upon adversely will be found in table 25.

#### SWEETS AND CHOCOLATES.

During the year under review 80 samples of sweets and chocolates were examined. Forty-eight of the samples were submitted by County Sampling Officers and 32 by Autonomous Food and Drugs Authorities. Of the 48 County Samples, 10 were of sweets the names of which included the word "butter," and five were samples of chocolates. The 32 samples from Autonomous Authorities included eight of butter sweets, 10 of chocolates and two of chocolate liqueurs. The two samples of chocolate liqueurs were both of foreign manufacture and it is interesting to note that the liquid centres in one sample contained alcohol equivalent to 14 per cent. of proof spirit while in the other sample the liquid centres contained 32 per cent. of proof spirit. The alcohol contents would, of course, be very considerably reduced if they were calculated as a percentage of the total weight of the chocolates.

Three County samples and five of the samples submitted by Autonomous Authorities were reported upon adversely. Two of the unsatisfactory samples from Autonomous Authorities were butter sweets that were found upon analysis to contain only 2·5 per cent. and 1·6 per cent. respectively of butter-fat. It will be remembered that in the year 1951 a Code of Practice was agreed between the Ministry of Food and representatives of the Chocolate and Sugar Confectionery trade that where the word "butter" or a synonym is used in the description of sugar confectionery or chocolate products the butter-fat content shall be not less than four per cent.; in sweets consisting of two distinct parts the butter-fat content shall be not less than four per cent. in the part containing the butter-fat. The manufacturers of both the above products were cautioned by the Food and Drugs Authorities concerned.

The following paragraphs contain brief accounts of the three unsatisfactory County samples :—

##### *Milk Chocolate Eggs, Sample No. E.9387.*

This informal sample of prepacked small chocolate eggs bore a label which stated "... contains delicious double-cream centres. ...". Upon examination, the chocolate eggs were found to be filled with sugar fondant (containing sucrose and glucose solids but devoid of any form of



fat), the centre portion being coloured yellow. The filling was clearly intended to represent the white and yolk of an egg. Unfortunately the expression "double cream" is a description specified in the Food Standards (Cream) Order, 1951. As the filling was devoid of cream or double cream the description "double cream centres" could be misleading and could also be a misuse of the designation "cream" under Section 47 of the Food and Drugs Act, 1955. The manufacturers were communicated with and they stated that the product had been introduced for the Easter trade and had already been withdrawn from sale. As the result of the representations made by this and other Food and Drugs Authorities the description would be altered if the line were offered in future years.

*Sweets, Sample No. C.7929.*

This informal sample of prepacked glacé boiled sweets bore on the label the claim "Rich in Energising Glucose." Upon analysis the sweets were found to contain :—Sucrose 61·6 per cent., Glucose syrup solids 30·6 per cent., and Invert sugar 5·2 per cent. The ingredient claimed was not, therefore, the pure sugar glucose (dextrose) but was glucose syrup solids in an amount which would only contain approximately 6·5 per cent. actual dextrose in addition to maltose and dextrans. Furthermore, this proportion of glucose syrup solids is normally used by glacé sweet manufacturers to obtain the appearance and consistency desired without any claim as to its presence being made on the label. The manufacturers concerned were communicated with and they admitted that the question of the labelling of the sweets had already been brought to their notice by another authority. At first the manufacturers wished to simply replace the word "Glucose" in the claim by the words "liquid Glucose." In further correspondence it was pointed out that to continue to use the word "rich" when the main ingredient was sucrose and not glucose syrup solids, coupled with the fact that the proportion of the latter was only normal for this type of sweet, might still possibly be construed as misleading. Eventually the packers decided to declare the actual percentage of liquid glucose present and to delete the word "rich."

*Rum and Butter Toffee, Sample No. N.7770.*

This sample, upon analysis, was found to contain five per cent. of butter-fat and it, therefore, complied with the Code of Practice for butter sweets previously referred to. Sugar confectionery is exempt from the requirement to declare a list of ingredients as normally required by the Labelling of Food Order, but in this instance a voluntary list of ingredients was stated on the label which read as follows :—"Sugar, Glucose, Preserved table butter, full cream condensed milk, hardened palm kernel oil, artificial flavour." Your Analyst holds the view that where a voluntary declaration of ingredients is made on a label it should be in the

correct order, *i.e.*, in the order of the proportions in which the ingredients were used, the ingredient used in the greatest proportion being specified first. Furthermore, where a food contains an ingredient, such as preserved table butter, which is made from two or more constituents, the various constituents contained therein should be declared in their correct order in the list of ingredients. In view of the fact that the total butter-fat content was only five per cent., including the butter-fat derived from the full cream condensed milk present, it followed from the results of the analysis of the product that the ingredient "butter" should be declared after all the other main ingredients. After prolonged correspondence with the manufacturers on the matter they agreed to reconsider the wording of the label when next reprinted.

#### THE FOOD STANDARDS (SACCHARIN TABLETS) ORDER, 1953.

The above Order came into operation on the 1st September, 1953, *i.e.*, on the same date that the Saccharin Order, 1949, was revoked. The last mentioned Order had exercised certain controls over the retail sale of saccharin, saccharin tablets and other sweetening agents, including a standard of composition for saccharin tablets. The 1953 Standards Order re-enacted this standard which is as follows :—

“ A saccharin tablet or other sweetening tablet containing saccharin—

- (i.) shall contain not less than 0·18 grain and not more than 0·22 grain of saccharin or the equivalent weight of soluble saccharin ;
- (ii.) may contain as excipient sodium bicarbonate with or without other suitable substances, the total amount of excipient not to exceed four times the maximum quantity of saccharin ;
- (iii.) shall not contain more than five per cent. water-insoluble matter nor less bicarbonate than required to render the saccharin completely soluble.”

In addition to the above, another Order, known as the Artificial Sweeteners in Food Order, also came into operation on the 1st September, 1953, and this had the effect of prohibiting the presence of any artificial sweetener in food intended for sale for human consumption. The definition of "artificial sweetener" for the purpose of the Order does not include saccharin, sugars, carbohydrates or polyhydric alcohols. The Order, therefore, permits the use of saccharin in the manufacture of food but it prohibits the addition to food of other chemical compounds which are sweet to the taste other than the exceptions listed above. In a Press Notice issued at the time the Minister of Food stated that this step had been taken on the advice of the Medical Research Council as the latter



considered that some chemicals, other than saccharin, which had sweetening properties were undesirable on health grounds as additions to food. There is another aspect of the question of artificial sweeteners and that is their absence of nutritional value. Section 4 (2) of the Food and Drugs Act places an obligation on the Government when making regulations as to the composition of foods to have regard to the desirability of restricting as far as practicable the use of substances of no nutritional value as ingredients of foods. In this connection it is interesting to note that the Foods Standards Committee of the Ministry of Agriculture, Fisheries and Food in their report on the Standard of Composition for Ice-Cream, published during the year under review, recommend on nutritional grounds that even saccharin should be prohibited as an ingredient in ice-cream, unless it is diabetic ice-cream suitably labelled as such.

During the year 1957, seven samples of saccharin tablets were submitted for examination, all by County Sampling Officers. One of the samples was reported upon adversely. Informal sample No. N.6787, was found upon analysis to contain 0.17 grain of saccharin per tablet, whereas the limits prescribed by the Standards Order are 0.18 to 0.22 grain per tablet. In correspondence with the manufacturers it transpired that their formula would yield slightly less than the average saccharin requirement of the Order and, furthermore, that the weight of 60 tablets made to their formula should have been 40 grains. The average total weight of the tablets analysed was, however, only 38 grains per 60 tablets. This is equivalent to a deficiency in weight of five per cent. and is also approximately the percentage deficiency found in saccharin content, indicating that the particular mix used had only contained the minimum proportion of saccharin required by the Order. As a result of the correspondence, the manufacturers gave an assurance that there would be no recurrence of the deficiency and that, in future, they would work to a formula giving 0.2 grain saccharin per tablet.

#### SAMPLES CONTAINING EXTRANEEOUS MATTER.

During the year under review 30 food and drug samples (15 County and 15 from Autonomous Authorities) were reported upon adversely because they were found upon examination to contain extraneous matter. The corresponding number for the year 1956 was 17 samples. In addition, during the year under review a further 15 samples, found to contain extraneous matter, were submitted under the heading of Miscellaneous samples and are mentioned in Part V of this report. The types of extraneous matter found in the food and drugs samples included :—used chewing gum, used lubricating oil, broken glass, a halfpenny, cardboard,

cotton material, a human hair, cinders, a mouse, mouse excreta, copying ink lead, fragments of paper and detergent solution. Of the 15 County samples five were samples of milk and these are mentioned in the section of this report dealing with the types of milk adulteration. The remaining 10 County samples are briefly described below.

*Orange Drink, Sample No. N.6693.*

This informal sample was submitted as the result of a complaint. It consisted of part of a one-third pint bottle of orange drink. The bottle itself was intact but on examining the contents numerous fragments of broken glass were found, weighing in all, 4.39 grammes. The largest piece of broken glass weighed 1.1 grammes and was approximately nine-tenths of an inch long. Legal proceedings were instituted against the dairy company responsible for bottling the orange drink and at the hearing they pleaded "guilty" and were fined £25 together with £4 18s. costs.

*Meat Pie, Sample No. E.3715.*

This sample consisted of a portion of a small meat pie which contained embedded inside the top pastry a halfpenny. The coin had dough firmly adhering to it and had clearly been present in the pie before it was baked. It is interesting to note that the copper content of the pastry adjoining the halfpenny was 320 parts per million, as compared with only 8.5 parts per million in another part of the pie. Legal proceedings were instituted against the bakers who were fined £5 and £6 13s. costs.

*Biscuit, Sample No. M.7354.*

This sample consisted of one arrowroot biscuit submitted on complaint by the Public Health Inspector of a County District. Upon examination it was found that the surface of the biscuit had been splashed with a drop of used lubricating oil. The mineral oil content of the stained portion was 1.7 per cent. and the iron content 470 parts per million. The unstained part of the biscuit was free from mineral oil and contained only 51 parts per million of iron. The facts regarding this sample were reported to the food and drugs authority of the manufacturer's area.

*Bread, Sample No. E.3725.*

This sample consisted of a portion of a loaf which contained embedded in the crumb over an area of approximately 0.5 to 0.2 inch dark brown material which proved to be dough contaminated with used lubricating oil. The stained material weighed approximately 0.35 gramme and had a total oil content of 3.4 per cent. including 1.5 per cent. of mineral oil. The iron content of the stained material was 4,220 parts per million. The bakers of the bread were cautioned.



*Fruit Drink, Sample No. E.3728.*

This one-third pint bottle of orange drink was submitted as the result of a complaint. The bottle was full when received and the metal foil cap was securely attached to the neck of the bottle and there was no indication that the cap had been tampered with. In addition to the orange drink the bottle was found to contain some buff coloured material which proved upon examination to be a piece of used chewing gum weighing 1.2 grammes. Legal proceedings were instituted against the bottlers of the drink who were fined £2 and £8 costs.

*Kosher Bread, Sample No. E.3729.*

This small loaf was submitted as the result of a complaint and on examination was found to contain four pieces of material, weighing in all 0.26 gramme, which proved upon examination to be of the nature of cardboard. The bakers concerned were cautioned.

*Bread, Sample No. S.2944.*

This small loaf had adhering to the bottom crust a number of fragments which when separated from the crumb weighed 0.12 gramme and were found to consist of felted cotton fibres impregnated with edible oil. None of this material was found in the interior of the loaf. It transpired that the felted cotton was probably derived from a webbing conveyor belt, the edges of which were in rather a worn and frayed condition. The baker concerned was cautioned.

*Orange Drink, Sample No. E.9916.*

This sample consisted of an unopened one-third pint bottle submitted as the result of a complaint. The metal foil cap of the bottle showed no sign of having been tampered with and the bottle itself was not chipped or broken. Upon examination it was found that the bottle contained, in addition to the orange drink, one large fragment and several minute particles of broken glass. The largest fragment weighed 1.51 grammes and was approximately three-quarters of an inch in length. Legal proceedings were instituted against the dairy company responsible for bottling the orange drink and they were fined £5 together with £20 11s. costs.

*Fruit Malt Loaf, Sample No. S.195.*

This sample consisted of a loaf from which some slices had been removed. Upon examination it was found that a fragment of broken glass was embedded in the crumb of the loaf just below the cut surface,

and three further pieces of glass were found approximately in the centre of the loaf. The total weight of the four pieces of glass was 0.73 gramme. The curvature, markings, thickness and other physical characteristics of the pieces of glass were consistent with their having originally formed part of a particular type of glass tumbler. After a consideration of the circumstances of this case a letter of caution was sent to the bakers.

*Meringue, Sample No. M.7492.*

This cake was submitted by the Chief Public Health Inspector of a County District as the result of a complaint alleging that it contained mouse excreta. Upon examination it was found that the extraneous matter present actually only consisted of cake crumbs. However, a human hair approximately three inches long was also found embedded in the meringue. The bakers concerned were interviewed and cautioned.

#### SAMPLES CONTAINING INSECTS OR INSECT REMAINS.

Six food and drugs samples came under this heading during the year under review, all submitted by County Sampling Officers. In addition, two samples submitted as miscellaneous samples and mentioned in Part V of this report were also found to contain insects.

A piece of bread and marmalade, sample No. E.3723, and another sample consisting of two slices of white bread, No. E.3724 were submitted as the result of a complaint. The bread in both instances was from the same bakery and might actually have been from the same loaf. The first of the two samples was found to contain a dead corn or flour beetle, *Gnathocerus Cornutus*, while the other sample contained a beetle thorax and an abdomen probably from the same kind of beetle. This beetle is about 4.5 millimetres long and is extremely difficult to eradicate completely from bakeries, etc., as it can be re-introduced with sacks of flour. The bakers concerned were cautioned and the bakery premises inspected.

*Sliced Loaf, Sample No. N.7599.*

Upon examination the head and thorax of a beetle was found in one slice and the abdomen of the beetle in a corresponding position in the next slice. The beetle was a larder or bacon beetle, *Dermestes Lardarius*. This beetle is cosmopolitan in distribution and is found on a wide variety of food stuffs including all types of cereal products. The facts in relation to this sample were referred to the local authority in whose area the bakery was situated.



*Oatmeal, Sample No. E.9581.*

This informal sample was found upon examination to contain five live moth grubs and some cocoon webbing. In this instance also the matter was referred to the local public health inspector with a view to the stock in the shop concerned being examined.

*Canned Sausages, Sample No. E.3731.*

This opened can of sausages was submitted as the result of a complaint. Embedded in the congealed fat around the sausages was a dead beetle which was identified by Dr. Hinks of the Natural History Museum, University of Manchester, as a carnivorous ground beetle (*Notiophilus* sp.). This beetle is about 5.5 millimetres long, it lives on small insects and is not associated with food infestation. Like all beetles it can fly, its presence in the can of sausages was probably quite accidental and due to this cause. The packers were communicated with and they gave an assurance that everything would be done to prevent any incident of this type occurring in future.

*Ice Bun, Sample No. N.8277.*

This sample, which consisted of part of an ice bun, was submitted as the result of a complaint. Upon examination it was found to contain the remains of a crustacean, measuring approximately eight millimetres long, probably an immature *Asellus* (water louse). This would probably have been present in the water used in mixing the dough. The matter was referred to the local authority of the area in which the bakery was situated.

## VITAMIN TABLETS, CAPSULES AND LOZENGES.

During the year under review 30 samples coming under the above heading have been examined and of these 29 were submitted by County Sampling Officers. The samples may be subdivided as follows :—One of Cod Liver Oil Capsules, three of Halibut Liver Oil Capsules, one of Vitamin B<sub>1</sub> Tablets, one of Vitamin B<sub>12</sub> (Cyanocobalamin) Tablets, eight of Vitamin C Tablets, two of Vitamin C Lozenges, one of Vitamin K (Menaphthone) Tablets, nine of Multivitamin Capsules or Tablets (including two of Compound Yeast Tablets) and four of Multivitamin and Mineral Capsules or Tablets. With one exception (see below) all the

samples bore a declaration as to the amounts of the vitamins and minerals present and with the exception of three samples all were reported to be satisfactory. The multivitamin preparations each contained three or more of the following vitamins :—Vitamin A, Vitamin B<sub>1</sub> (Aneurine or Thiamine), Vitamin B<sub>2</sub> (Riboflavine), Vitamin B<sub>6</sub> (pyridoxine), Vitamin C (Ascorbic Acid), Vitamin D, Vitamin E ( $\alpha$ -tocopherol), Nicotinic Acid or Nicotinamide and Pantothenic Acid, while the preparations claiming the presence of minerals each contained two or more of the following :—Calcium, Copper, Iodine, Iron, Manganese, Zinc and Phosphates. In addition to biological assay, most of the vitamins may be determined by one or more of the following three methods :—chemically, microbiologically or by measurement of their ultraviolet absorption properties and in the County Laboratory we have determined Vitamins A, B<sub>1</sub>, B<sub>2</sub>, B<sub>12</sub>, C, K and Nicotinic Acid by one or other of the last mentioned three methods.

The three unsatisfactory preparations all contained Vitamin C. An informal sample of Vitamin C tablets, No. N.6985, bore no declaration of the quantity of Vitamin C present and the instructions stated “ one tablet three times a day.” Upon analysis the tablets were found to each contain 50 milligrammes of ascorbic acid. The British Pharmacopoeia, 1953, however, requires that if the quantity to be contained in a tablet is not stated, tablets each containing 25 milligrammes of Vitamin C shall be supplied. Furthermore, the B.P. states the prophylactic dose of Vitamin C to be 25 to 75 milligrammes daily while the therapeutic dose is given as 0.2 to 0.5 gramme daily. The instruction as to the number of tablets to be taken daily given with this particular sample would result in more than the normal prophylactic dose being taken yet would be insufficient to provide a therapeutic dose. The Pharmacist concerned was communicated with and the above points brought to his notice. Two informal samples, Nos. C.7141 and N.6925, of Vitamin C fruit flavoured lozenges of the same manufacture, but submitted by different County Sampling Officers, were each declared to contain 4.5 milligrammes of Vitamin C per lozenge. The first of the samples consisted of two packets and the Vitamin C content of the lozenges was found upon analysis to be 3.8 milligrammes per lozenge in one packet and 4.3 milligrammes per lozenge in the other packet. No evidence was found of the oxidation of any of the ascorbic acid to dehydroascorbic acid. The other sample, submitted about a week later, was found upon analysis to contain only 3.6 milligrammes of ascorbic acid per lozenge. The manufacturers were communicated with and they stated that they had already taken steps to ensure the full amount being present in future by including about 15 per cent. more than the declared amount of Vitamin C.



## AMMONIATED MERCURY OINTMENT.

Both ammoniated mercury and ointment of ammoniated mercury are the subjects of monographs in the British Pharmacopoeia, 1953. The ointment is required to contain 2·5 per cent. (limits 2·25 to 2·75) of ammoniated mercury ( $\text{NH}_2\cdot\text{HgCl}$ ) in simple ointment base. This ointment, is therefore, only half the strength of the corresponding ointment in the 1932 Pharmacopoeia. Ammoniated mercury is a poison listed in Part I of the Poisons List included in the Poisons List Order, 1953 and its sale is subject, therefore, to the usual restrictions imposed by the Pharmacy and Poisons Act, 1933, and the Poisons Rules. Briefly, it can only be sold by a registered pharmacist and must be labelled with the word "Poison," the name of the poison, the proportion of poison present (or in the case of a substance in the B.P., B.P.C., or the N.F., it is sufficient if these letters follow the name of the poison) and the name and address of the seller. These requirements also apply to preparations containing ammoniated mercury, *i.e.*, to ammoniated mercury ointment. Ammoniated mercury does not, however, come within the First or Fourth Schedules to the Poisons Rules and the special restrictions imposed on the sale of substances listed in these Schedules do not, therefore, apply to it.

During the year under review, eight samples of ammoniated mercury ointment were submitted for examination, all by County Sampling Officers. All the samples complied with the requirements of the British Pharmacopoeia as to composition but two of the samples did not comply with the labelling requirements of the Pharmacy and Poisons Act. Informal sample No. N.7285 did not bear on the label the word "Poison," the name of the preparation or the name and address of the vendor, while sample No. C.7772 was not labelled with the word "Poison." The vendors of both the samples were interviewed and their attention drawn to these omissions.

## BORAX.

Eighteen samples of borax were submitted during the year under review, all by County Sampling Officers. Two of the samples were reported upon adversely and they are of interest because the labels on the cartons in which the samples were packed bore recommendations which were contrary to the requirements of the Public Health (Preservatives, Etc., in Food) Regulations, 1925 to 1953. Borax is the subject of a

monograph in the British Pharmacopoeia, 1953, and it is required to contain not less than 99·0 per cent. and not more than the equivalent of 103·0 per cent. of hydrated sodium borate,  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ . In addition, limit tests for certain impurities and other tests of identity, etc., are also included. A dose for internal use is no longer prescribed although previous editions of the B.P. did state an internal dose. As already mentioned in another section of this report, the omission of a dose is probably bound up with the fact that there is evidence that the taking of borax can produce accumulative toxic effects. In the general notices included in the Pharmacopoeia it is stated that the standards in the monograph apply to articles intended for medicinal use but not necessarily to articles which may be sold under the same name for other purposes. Borax has, of course, many uses other than medicinal, including laundry purposes and generally as a detergent, but it would appear reasonable to assume that commodities of this type sold by Pharmacists under the descriptions "Purified," "Refined," "Finest Quality," etc., should be of B.P. quality unless a clear indication is given at the time of purchase that they are not intended for medicinal use. The use of borates as a preservative in food is prohibited under the Preservative Regulations and Paragraph 5 (1) of the Regulations also prohibit the selling of any article which is recommended on the label for use as a preservative of, or colouring matter for, any article of food if such use would be contrary to the regulations. Informal sample No. N.6706 of prepacked Purified Borax bought from a chemist's shop was found upon analysis to contain 4·7 parts per million of arsenic, *i.e.*, 0·7 part per million above the B.P. limit of four parts per million. Furthermore, among other recommendations on the label for its use the following was printed, "As a Preservative, a small pinch in liquid food, etc., or a solution sprinkled on solid food, etc., considerably helps to keep it sweet for an extended period." This recommendation is clearly contrary to the Preservative Regulations and the packers of the commodity were communicated with and asked to withdraw the stock from sale, to delete the reference to a preservative from the label and to only supply borax of B.P. quality, in future, when it was intended for sale as Purified Borax by Pharmacists. The packers readily agreed to comply with the above suggestions. The other unsatisfactory prepacked sample, No. E.8414, was found upon analysis to be of B.P. quality but the label bore the following recommendation:—"Directions for use for Boiling Vegetables, Place a teaspoonful of the borax into the water that is to be used—it will preserve the colour, delicacy and freshness of flavour of the vegetable; no soda will be required." The recommendation was also considered to be contrary to paragraph 5 (1) of the Preservative Regulations and the packers concerned were asked to delete the recommendation from the label and to take steps to withdraw the offending stocks from sale; this they agreed to do.



## SODIUM BICARBONATE.

Sodium Bicarbonate is used as a raising ingredient in flour confectionery, in cooking, and as a medicine. One of its common uses internally is to relieve pain caused by acid secretion in the stomach. It is the subject of a monograph in the British Pharmacopoeia and this includes a standard of composition and limits for various impurities. It is very unusual to have to report adversely upon samples of this commodity, but the instance recorded below does indicate the value of a reasonable amount of routine sampling of substances which are generally found to be satisfactory. During the year under review, 29 samples of Sodium Bicarbonate were submitted for examination and 27 of these were submitted by County Sampling Officers. Two of the County samples were reported upon adversely. Samples, Nos. E.9638 and E.9646 were informal and formal samples respectively of the same brand of prepacked Sodium Bicarbonate. Upon analysis, the informal sample was found to be a mixture of 51.3 per cent. of Sodium Bicarbonate and 48.7 per cent. of Borax, while the formal sample, No. E.9646, contained 42 per cent. Sodium Bicarbonate, 43.5 per cent. Borax and 14.5 per cent. Boric Acid. The difference in composition between the two samples might be due to the fact that the formal sample was obtained by mixing the contents of a number of separate one ounce cartons. The internal dose of Sodium Bicarbonate prescribed by the British Pharmacopoeia is one to four grammes. Both Borax and Boric Acid had doses of 0.3 to one gramme in the B.P. 1948, but the B.P. 1953 omits internal doses for both of these substances. Borates are no longer permitted as preservatives in foods and the British Pharmaceutical Codex, 1954, and its 1957 Supplement state that both Borax and Boric Acid have accumulative toxic effects. The taking of a maximum B.P. dose of four grammes of either of the two samples of "Sodium Bicarbonate" described above would have resulted in more than twice the previous maximum dose of Borax and Boric Acid being consumed and, as already indicated, the B.P. no longer specifies internal doses for these substances. In trying to find an explanation for the composition of these samples it might be mentioned that the British Pharmaceutical Codex includes formulae for two eye lotions, one of which contains 3.2 per cent. of an equal mixture of Borax and Sodium Bicarbonate and the other contains 3.43 per cent. of Boric Acid, each in distilled water. It would appear that the ingredients for these eye lotions had been packed accidentally in the cartons instead of pure Sodium Bicarbonate. The remainder of the stock was immediately withdrawn from sale and legal proceedings were recommended. It transpired, however, that although the stock in question had only been in the retail shop for one week it had previously been on a wholesaler's premises for two years. Further enquiries showed that the actual

packers were no longer in business and under these circumstances it was not possible to institute proceedings against the firm probably responsible for the mistake.

#### CAMPHORATED OIL.

For many years the British Pharmacopoeia has required camphorated oil to contain 20 per cent. of camphor but, due to changing conditions mainly brought about by the last world war, the nature of the oil in which the camphor is dissolved has been altered twice within the last 18 years. In the British Pharmacopoeia 1932, the composition of camphorated oil was declared to be 20 per cent. by weight of camphor in olive oil. Soon after the beginning of the war, in June, 1940, the Second Addendum to the Pharmacopoeia permitted arachis oil, cottonseed oil or sesame oil to be used in place of olive oil. This position continued until the publication of the British Pharmacopoeia, 1948, when the composition of camphorated oil was changed to 20 per cent. by weight of camphor in arachis (ground nut) oil. This last formula has also been included in the present (1953) edition of the British Pharmacopoeia; the limits for camphor content being fixed at 19.0 to 21.0 per cent. <sup>w</sup>/w.

During the year under review 25 samples of camphorated oil were submitted for examination, 23 being submitted by County Sampling Officers, and of these one county sample was reported upon adversely. Informal sample, No. C.7055, which was labelled "Pure Camphorated Oil B.P.," was found upon examination to be completely devoid of both camphor and arachis oil. It consisted of olive oil. A formal sample was purchased a few days later from the same shop but this proved upon analysis to be camphorated oil of normal composition. The vendor was cautioned in respect of the informal sample and informed of the seriousness of not supplying the correct commodity to a purchaser.

#### SEIDLITZ POWDERS.

In addition to the usual seidlitz powder, or compound effervescent powder, of the British Pharmacopoeia there are two other seidlitz powders included in the British Pharmaceutical Codex, *i.e.*, a double-strength seidlitz powder and a strong (or extra-strong) seidlitz powder. These powders each consist of two packets, a definite weight of sodium potassium tartrate (Rochelle salt) mixed with 2.5 grams of sodium bicarbonate wrapped in blue paper and 2.5 grams of tartaric acid wrapped in white paper. The amounts of sodium bicarbonate and tartaric acid are constant for all seidlitz powders but the strength of the powder is varied by altering



the amount of Rochelle salt in accordance with the following table ; it will be noted that the extra-strong powder is mid-way in composition between the ordinary seidlitz powder and the double-strength seidlitz powder :—

Type of Seidlitz Powder.	Amount of Rochelle Salt.
Seidlitz Powder B.P.      ...      ...      ...	... 7·5 grams.
Strong (or Extra-strong) Seidlitz Powder B.P.C.	11·25 grams.
Double strength Seidlitz Powder B.P.C.	... 15·0 grams.

During the year under review 12 samples of seidlitz powder B.P., three of extra-strong seidlitz powder B.P.C., and two of double-strength seidlitz powder B.P.C., were submitted for examination. With the exception of one sample of Seidlitz Powder submitted by an Autonomous Food and Drugs Authority, all the remaining samples were submitted by County Sampling Officers. Five County samples, two consisting of Seidlitz Powders B.P. and three of extra strong Seidlitz Powders were reported upon adversely. An informal sample, No. C.8050, of Seidlitz Powders B.P. consisted of four powders. Upon analysis all the blue packets were overweight, the figures being 10·68, 10·76, 10·77 and 11·02 grammes, against the B.P. limits of 9·5 to 10·5 grammes. Similarly, two of the four white packets were overweight being 3·00 and 2·76 grammes against the B.P. limits of 2·25 to 2·75 grammes. The vendor was communicated with and he withdrew the remainder of the box of powders from sale and returned them to the manufacturers. The latter checked further powders from the box in question and agreed that they were overweight. They stated that the powders were weighed out on an automatic machine which is checked at intervals to make any necessary adjustments. If, on checking, it is found that an error has developed there is an instruction that powders of doubtful weight should be returned into the bulk. This instruction had, in this instance, apparently not been followed but random check analyses carried out on other boxes of powders packed at the same time showed them to be satisfactory. Sample No. N.7677 consisted of three Seidlitz Powders B.P. One of the white powders was slightly overweight in that it weighed 2·80 grammes. No action was advised in this instance. Sample No. C.8052 consisted of four extra strong Seidlitz Powders B.P.C. Upon analysis all four blue packets were found to be overweight, the figures being 14·73, 14·80, 14·99 and 14·84 grammes compared with the B.P.C. limits of 13·0 to 14·4 grammes. All the white packets were found to be correct. The vendor of this sample was communicated with and he, in turn, brought the results of the analysis to the attention of the manufacturers. Samples Nos. E.9678 and E.9752 of extra strong Seidlitz Powders B.P.C. were both obtained from the same retail shop. The first sample consisted of four powders and the contents of two of the blue packets were found to be overweight,

being 14.70 and 14.48 grammes, as compared with the B.P.C. limits of 13.0 to 14.4 grammes. A further sample from the same stock was advised and this, No. E.9752 consisted of three powders. One of the blue packets in this sample was overweight, being 14.91 grammes. In addition, two of the white packets weighed 2.99 and 3.24 grammes, figures which exceed the B.P.C. limits for white packets of 2.25 to 2.75 grammes. The packers of the powders were communicated with and they stated that the discrepancies were probably due to the use of a balance which had been found to be faulty and which had been replaced by automatic equipment.

#### PROSECUTIONS.

When the adulteration of a sample is considered to be sufficiently serious, legal proceedings are instituted. Prosecution, however, is only one of the means of dealing with adulterated or otherwise unsatisfactory samples. A perusal of tables 11 and 25, which are concerned with the various types of milk adulteration and sophisticated samples other than milk, respectively, shows that many of the samples are only slightly adulterated. In the case of food and drug samples, other than milk, deterioration may be due to long storage or adulteration may be brought about by the action of some person other than the actual vendor. In these instances it is often considered appropriate to take less drastic action than legal proceedings. In the case of milk samples vendors are sometimes cautioned and subsequent samples then frequently prove to be genuine ; in other instances dairies are visited by the Sampling Officers in order to correct faulty dairy management which has given rise to unsatisfactory samples. In the case of other foods and drugs appropriate action may take the form of the surrender for destruction of the remainder of any unsatisfactory stocks, returning stocks to manufacturers or communicating with packers with regard to unsatisfactory labels, etc.

During the year a total of 349 County food and drugs samples were reported upon adversely and in respect of 21 of these prosecutions were instituted, 12 in respect of milk samples, one in respect of Channel Islands Milk, one in respect of fish paste, one in respect of ice-cream and six in respect of samples containing extraneous matter. There were 17 convictions or orders to pay costs and two dismissals although the analytical findings in both cases were not questioned. In respect of one of these an appeal by way of case stated has been entered. In addition, two prosecutions were withdrawn owing to the illness of the defendant. The total fines and costs during the year amounted to £257 1s. In table 27 will be found similar information to the above for the years 1912 to 1957 inclusive.



Table 27.

*County Fines and Costs during the Years 1912-1957.*

Year.		Number of Prosecutions.	Convicted or ordered to pay costs.	Dismissals, etc.	Fines and Costs.		
					£	s.	d.
1912-1935	...	1504	1302	202	6,239	1	7
1936	...	22	20	2	107	14	9
1937	...	39	36	3	165	1	0
1938	...	26	24	2	132	10	1
1939	...	19	18	1	100	11	6
1940	...	25	23	2	171	14	0
1941	...	84	79	5	824	13	2
1942	...	38	36	2	502	4	10
1943	...	54	49	5	375	10	11
1944	...	38	37	1	291	19	6
1945	...	33	33	0	365	4	6
1946	...	94	92	2	936	7	9
1947	...	98	93	5	667	7	0
1948	...	70	69	1	703	0	6
1949	...	48	45	3	518	17	2
1950	...	43	42	1	405	8	7
1951	...	50	39	11	362	11	6
1952	...	65	64	1	620	13	0
1953	...	54	53	1	576	12	8
1954	...	45	45	0	294	9	6
1955	...	42	41	1	261	7	6
1956	...	20	19	1	185	13	6
1957	...	21	17	4	257	1	0
Total	...	2,532	2,276	256	15,065	15	6

Table 28.

*Prosecutions arising out of Samples purchased during the year 1957.*

District.	Number of Prosecutions.	Convicted or ordered to pay Costs.	Dismissals, etc.	Fines and Costs.
				£ s. d.
Burnley R.D.C. ... ..	1	...	1	...
Clitheroe R.D.C. ... ..	1	1	...	15 19 0
Dalton U.D.C. ... ..	1	1	...	9 18 0
Droylsden U.D.C. ... ..	1	1	...	25 16 0
Farnworth Borough ... ..	1	1	...	9 18 0
Fylde R.D.C. ... ..	1	1	...	55 5 0
Garstang R.D.C. ... ..	4	4	...	10 0 0
Heywood Borough ... ..	3	1	2	10 0 0
Lancaster R.D.C. ... ..	1	1	...	45 5 0
Leyland U.D.C. ... ..	1	1	...	29 18 0
Preston R.D.C. ... ..	1	1	...	7 19 0
Thornton Cleveleys U.D.C.	3	3	...	25 10 0
Tyldesley U.D.C. ... ..	1	1	...	11 13 0
West Lincs. R.D.C. ... ..	1	...	1	...
County Districts ... ..	21	17	4	257 1 0
Autonomous Authorities ...	7	6	1	45 10 0
Total.—All sources ... ..	28	23	5	302 11 0

PART II.—THE MILK (SPECIAL DESIGNATION)  
(PASTEURISED AND STERILISED MILK)  
REGULATIONS, 1949 TO 1953.

*Phosphatase Test, Half-hour Methylene Blue Test and  
Turbidity Test.*

The above Regulations applying to heat-treated milk (as distinct from other Regulations relating to raw milk) were made jointly by the Minister of Health and the Minister of Food. The Regulations, besides relating to pasteurised milk, also provide for the special designation “sterilised milk.”



The special designations for heat-treated milk are “ Pasteurised ” and “ Sterilised ” but in appropriate circumstances the designations “ Tuberculin Tested Milk (Pasteurised) ” and “ Tuberculin Tested Milk (Sterilised) ” may also be used.

Food and Drugs Authorities are responsible for the granting of pasteurising and sterilising licences but Local Authorities are responsible for all other licences required by the Regulations. The duties of Food and Drugs Authorities include the inspection of records, the inspection of the arrangements for processing milk and the taking of samples in respect of all plants for which licences have been granted.

An amendment to the Milk (Special Designation) (Pasteurised and Sterilised Milk) Regulations which came into operation on the 20th December, 1953, required the compulsory use of overlapping caps on all containers of pasteurised milk from the 1st October, 1954. It will be remembered that this same date was fixed in the principal Regulations for the operation of the requirement that pasteurised milk must be put into the containers in which it is to be delivered to customers on the premises at which it has been pasteurised. It follows from this that the bottling of pasteurised milk from churns by retailers and the sale of pasteurised milk by measure from a can are now both illegal. The amending Order also permits sterilised milk to be processed in cans and other containers of a capacity of not more than one gallon as well as in bottles.

Pasteurised milk must be treated by one or the other of the following processes :—

(a) Retained at a temperature of not less than 145°F. and not more than 150°F. for at least 30 minutes and be immediately cooled to a temperature of not more than 50°F. ; or

(b) Retained at a temperature of not less than 161°F. for at least 15 seconds and be immediately cooled to a temperature of not more than 50°F. ; or

(c) Retained at such temperature for such period as may be specified by the licensing authority with the approval of the Minister.

Sterilised milk must be filtered or clarified, homogenised and heated to and maintained at such a temperature, not less than 212°F., for such a period as to ensure that it will comply with the turbidity test prescribed.

The Regulations state that samples may be taken at any time while the milk is in the possession of the processor or of the licensed dealer. Unopened bottles should be taken as samples where possible but where the

milk is in bulk (exceeding 1 quart) it may be sampled into sterile bottles. All samples must be carried in insulated containers (not artificially cooled) and they must arrive at the laboratory on the day of sampling.

Three tests are prescribed, a phosphatase test and half-hour methylene blue test for pasteurised milk and turbidity test for sterilised milk. Samples intended for examination by the phosphatase test must be stored in the laboratory at a temperature of between 32°F and 40°F while samples intended for the methylene blue test must be stored at the laboratory at an atmospheric shade temperature not exceeding 65°F. No storage temperature is prescribed for samples of sterilised milk.

The phosphatase test depends on the liberation of free phenol from the salt disodium phenyl phosphate by the enzyme phosphatase. This enzyme is always present in raw milk but is almost entirely destroyed by the amount of heat-treatment necessary for efficient pasteurisation, *i.e.*, necessary for the destruction of *m*-Tuberculosis and other pathogenic micro-organisms. The amount of phenol liberated in the test is an approximate but not directly proportionate measure of the phosphatase remaining in the milk ; a high result indicating insufficient heat-treatment or the presence of raw milk. The test is extremely delicate and it is essential that great care be exercised in collecting the samples for submission to the test, in testing the purity of the reagents used and in the actual carrying out of the test.

The methylene blue test depends on the decolorisation of methylene blue by bacteria and reducing substances present in milk. If under the conditions of the test, decolorisation occurs in less than 30 minutes it is deemed that there has been such a development of bacteria and reducing substances in the milk as to render its keeping quality unsatisfactory. The test is designed to ensure that milk will keep fresh, if kept reasonably cool, until the next day's supply is received by the consumer and with that end in view samples, before examination in the laboratory, are not kept in a refrigerator but are merely kept at atmospheric shade temperature not exceeding 65°F. It should be noted that the half-hour methylene blue test prescribed by these Regulations is quite different from the methylene blue test prescribed in the Milk (Special Designation) (Raw Milk) Regulations, 1949, in relation to raw designated milks.

The turbidity test for sterilised milk is based upon the fact that heating to not less than 212°F for a period sufficient for effective sterilisation will also completely denature all the soluble protein of the milk. Samples which show the presence of soluble protein under the conditions of the test are insufficiently heated or contain raw milk.



*The Milk (Special Designations) (Specified Areas) Orders 1952 to 1957.*

Following the publication of a government memorandum on Measures to Improve the Quality of the Nations Milk Supply the Minister of Food was given power under Regulation 55 G of the Defence (General) Regulations, dated 20th January, 1944, to restrict the sale of raw milk within any area which had been specified for that purpose in an Order made by the Minister. Before an area could be made a specified area it was, of course, necessary for the Minister to satisfy himself that adequate plant was available for heat-treating the whole of the milk sold within the area, with the exception of Tuberculin Tested Milk. Similar provisions to the above were included in the Milk (Special Designations) Act, 1949, and Regulation 55 G was then revoked. This Act was, in turn, repealed and replaced by the Food and Drugs (Milk, Dairies and Artificial Cream) Act, 1950, which came into operation on the 1st January, 1951, and which also consolidated certain other enactments. Section 19 of this Act made it compulsory to use a special designation in respect of all sales of milk by retail for human consumption in an area which has been designated by Order as a Specified Area. The only exceptions refer to certain catering sales and to the sale of milk by a producer to his employees, if, in the latter instance, he does not engage in any other selling of milk by retail. Section 23 of the same Act empowered the Minister of Food to bring into operation by Order the provisions of Section 19 in any area. The special designations which may be used in relation to heat-treated milk in a Specified Area are "Pasteurised," "Sterilised," "Tuberculin Tested Milk (Pasteurised)" and "Tuberculin Tested Milk (Sterilised)." In relation to raw milk the only special designation now permitted is "Tuberculin Tested." The use of the special designation "Accredited" was prohibited in specified areas on and after the 1st October, 1954, by Section 22 of the Food and Drugs (Milk, Dairies and Artificial Cream) Act, 1950, and the Milk (Special Designation) (Raw Milk) Regulations, 1949, prohibited the granting of Producer's licences to use the special designation "Accredited" after 30th September, 1952.

The preceding paragraph describes the position as regards the making of Specified Areas up to and including the early months of the year 1955 but, due to the making of two Transfer of Functions Orders in the year 1955 and the passing of the Food and Drugs Act, 1955, certain alterations in the law, particularly as to procedure, have since become operative. When the Ministry of Food was dissolved on the 7th April, 1955, the function of the Minister of Food to make Milk (Special Designations) (Specified Areas) Orders was transferred to the Minister of Agriculture, Fisheries and Food and this function was again transferred on the 6th July, 1955, to the Minister of Agriculture, Fisheries and Food and the Minister of Health acting jointly following the making of the Transfer

of Functions (Food and Drugs) Order, 1955. Due to the coming into operation of the Food and Drugs Act, 1955, on the 1st January, 1956, Sections 19, 22 and 23 of the Food and Drugs (Milk, Dairies and Artificial Cream) Act, 1950 (which related to the compulsory use of special designations in Specified Areas, the abolition of the special designation "Accredited" and the function of the Ministers to make Milk (Special Designations) (Specified Areas) Orders) have now been replaced by Sections 37, 40 and 41 respectively of the 1955 Act.

The first Milk (Special Designations) (Specified Areas) Order which affected part of the area of the County Food and Drugs Authority came into operation on the 1st November, 1952. Five other Orders similarly affecting parts of the County came into operation on the 1st January, 1954, the 1st October, 1954, the 6th December, 1955, the 10th April, 1956 and the 25th November, 1957 respectively. By the end of the year 1957, a total of 55 of the 92 County districts in the County Food and Drugs area had become specified areas. In view of the fact that it is the duty of the Food and Drugs Authority to enforce the provisions of Section 37 of the Food and Drugs Act, 1955, it follows from the above that an increased number of samples of special designation heat-treated milks are now being taken by County Sampling Officers in the County districts concerned for submission to the County Laboratory for examination by the statutory Phosphatase, Half-hour Methylene Blue or Turbidity tests.

During the year, 1,347 samples of milk were submitted for examination by the Phosphatase test and the Half-hour Methylene Blue test or by the Turbidity test. The samples were marked either Pasteurised, Tuberculin Tested (Pasteurised) or Sterilised and tables 29, 30 and 31 give particulars of the results obtained. Of the 10 County samples which failed the Phosphatase test, seven were stated to have been taken at pasteurising plants and three were obtained in specified areas. Of the 10 samples that failed the half-hour Methylene Blue test none were obtained directly from pasteurising plants but all were stated to have been taken in specified areas. This is not surprising in that it is hardly to be expected that freshly pasteurised milk, taken at a plant, would fail the half-hour methylene blue test. There is obviously more possibility of older milk, of poorer keeping quality, being obtained from roundsmen than from the processing plants.

With regard to the methylene blue test the Regulations prescribe that it shall be commenced between 9 a.m. and 10 a.m. on the day after the sample was taken and that in the meantime as already indicated, it shall be kept at the laboratory at atmospheric shade temperature not exceeding 65°F (the sample must not be kept in a refrigerator). During periods of exceptionally warm weather the shade temperature often exceeds the limit specified. In addition to the numbers reported as



unsatisfactory, 20 samples submitted by County Sampling Officers and two samples from an Autonomous Authority also failed to pass the test, but these were, however, stored due to abnormally hot weather conditions at atmospheric shade temperatures which exceeded 65°F. and the tests were therefore void. It should be mentioned, however, that even when the shade temperature exceeds 65°F. a high proportion of the samples still pass the test ; in view of the fact that keeping quality is particularly desirable in warm weather it is unfortunate that the statutory test cannot then be applied. With regard to the turbidity test it will be observed from table 31 that none of the samples of sterilised milk failed to pass the test.

*Table 29.*  
*Phosphatase Tests, 1957.*

Type of Milk.	Number Submitted.		Number Unsatisfactory.					
			County.			Borough.		
	County.	Borough.	Group II.	Group III.	Total	Group II.	Group III.	Total.
Pasturised ..	643	73	0	3	3	0	0	0
T.T. (Pasturised)	386	56	3	4	7	0	0	0
Totals .. ..	1,029	129	3	7	10	0	0	0

*Table 30.*  
*Half-hour Methylene Blue Tests, 1957.*

Type of Milk.	Number Submitted.		Number Unsatisfactory.	
	County.	Borough.	County.	Borough.
Pasturised ..	642	72	7	0
T.T. (Pasteurised) ..	383	55	3	0
Totals .. ..	1,025	127	10	0

*Table 31.*  
*Turbidity Tests, 1957.*

Type of Milk.	Number Submitted.		Number Unsatisfactory.	
	County.	Borough.	County.	Borough.
Sterilised .. ..	149	40	0	0
T.T. (Sterilised) ..	0	0	0	0
Totals .. ..	149	40	0	0

### PART III.—THE FERTILISERS AND FEEDING STUFFS ACT, 1926.

The Fertilisers and Feeding Stuffs Act, 1926, came into force on July 1st, 1928. It is intended to safeguard the purchasers of substances used for the fertilisation of the soil and for the feeding of cattle and poultry.

The general purpose of the Act, like that of the Act of 1906, which it repealed, is to provide civil remedies for the misdescription of, and to prevent fraud in, fertilisers and feeding stuffs. Its scope is defined by Regulations made by the Minister of Agriculture, Fisheries and Food.

In addition, during and since the war, a number of Regulations governing the control and composition of fertilisers and feeding stuffs were made by appropriate Government Departments. In the year 1953, however, the Minister of Food made the Feeding Stuffs (Revocation) Order which came into operation on the 1st August, 1953. The effect of this Order was to revoke all Orders made under the Defence (General) Regulations, 1939, which were concerned with the control of the manufacture, licensing, rationing and prices of Feeding Stuffs. The only statutory control of the composition of Feeding Stuffs now in operation is, therefore, that exercised under the Fertilisers and Feeding Stuffs Act, 1926.

The one exception to the above is that during the years 1953 and 1954, in exercise of powers under Section 2 of the Therapeutic Substances (Prevention of Misuse) Act, 1953, now replaced by Section 5 of the Therapeutic Substances Act, 1956, Regulations were made by the Minister of Health which permit the use of certain antibiotics, *viz.*, penicillin, aureomycin and oxytetracycline, in pig foods and poultry foods. These Regulations prescribe conditions with regard to labelling and also specify maximum limits for the amounts of the prescribed antibiotics which may be present.

It has already been mentioned that the scope of the Fertilisers and Feeding Stuffs Act is defined by Regulations. The Regulations operative prior to the year 1956 were the Fertilisers and Feeding Stuffs Regulations, 1932, to which minor amendments had been made in the years 1942 and 1951. In November, 1955, however, the Minister of Agriculture, Fisheries and Food made the Fertilisers and Feeding Stuffs Regulations, 1955, which came into operation on the 1st January, 1956. The new Regulations follow, in general, the form of the 1932 Regulations although they have been completely re-drafted and include amendments recommended by the Standing Advisory Committee. Some of these amendments are concerned with changes in methods of analysis but the Standing Advisory Committee is still engaged in carrying out a general review of the prescribed methods and it is expected that from time to time amending Regulations will be made to give effect to the



Committee's recommendations. The first of these amending Regulations was made on the 21st November, 1956, and came into operation on the 1st January, 1957. It provides for an alternative method of determining phosphoric acid in fertilisers and feeding stuffs.

Fifty samples have been examined for the County during the year under review. The number of County samples, therefore, has been maintained at the level reached over the previous eight years. Of these, 25 were fertilisers and 25 consisted of feeding stuffs. The fertilisers were all formal samples. The feeding stuffs comprised 23 formal samples and two informal samples.

In addition 30 samples (six formal and 24 informal) were examined for Autonomous Authorities. Of these 12 samples (all informal) were fertilisers and 18 (six formal and 12 informal) consisted of feeding stuffs.

Of the 25 samples of fertilisers examined for the County 16 were found upon analysis to be correct within the limits of variation permitted by Regulations made under the Act and nine showed minor deviations outside the permitted limits of variation.

With regard to the 25 samples of feeding stuffs examined for the County, 16 were found to be correct within the permitted limits of variation. With regard to the remaining nine samples, five showed minor deviations and four serious deviations from the guaranteed figures.

The four samples of feeding stuffs which showed serious deviations from the guaranteed figures all had deficiencies in protein which, in the opinion of your Analyst, were to the prejudice of the purchaser. Samples Nos. 17/9/A, No. 1 Pig Meal and 18/9/A, Battery Mash, both from the same manufacturers, after allowing for the limits of variation, were found to be deficient of 3.2 and 2.3 per cent., of protein respectively. With the consent of the Minister of Agriculture, Fisheries and Food legal proceedings, under Section 4 of the Fertilisers and Feeding Stuffs Act, 1926, were instituted against the manufacturers who were fined £10 and £6 13s. costs. Sample No. 14/5/A, Pig Ration, after allowing for the limits of variation, had a deficiency in protein of 1.35 per cent. A follow-up sample No. 15/5/A taken from the same manufacturer was, however, found to be correct within the limits of variation. The remaining sample, No. 32/11/A, Coarse Dairy Meal, after allowing for the limits of variation, was found to have a deficiency in protein of 0.9 per cent. but a further formal sample, No. 33/11/A, taken from the same manufacturer, was found to be correct within the limits of variation.

In tables 32 and 33 will be found particulars of all the samples of fertilisers and feeding stuffs examined for the County. The tables include the results obtained on analysis and, for comparison, the figures guaranteed in Statutory Statements, etc.

Table 32.  
Fertilisers.

Sample, Number, and Description.	Formal or Informal.	Per cent. Nitrogen.		Per cent. Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> ).								Per cent. Potash. K <sub>2</sub> O.		Other Figs. per cent.
				Total.		Soluble		Insoluble.		Soluble in Citric Acid.				
		G.	F.	G.	F.	G.	F.	G.	F.	G.	F.	G.	F.	
15/9/A Manchester— Blood and Bone Compound ...	F	5.5	6.0	8.6	9.2									
16/9/A Manchester— Dried Blood ...	F	12.2	11.9											
20/10/A Seaforth— Tomato Top- dressing ...	F	8.0	8.1		2.2	1.2	1.1	0.8	1.1			6.0	6.9	
21/10/A Seaforth— Flower Manure	F	6.0	6.3		6.55	3.83	4.31	2.17	2.24			9.0	8.05	
26/2/A Lonsdale— Growmore Fertiliser ...	F	7.0	6.5	7.0	7.4		5.1		2.3			7.0	6.4	
27/2/A Lonsdale— Special Standard Fertiliser ...	F	6.0	5.7		10.1	6.0	5.6	3.0	4.5			9.0	8.5	
28/11/A Widnes— Compound Fertiliser ...	F	9.0 (Or- ganic 1.0)	8.75 (Or- ganic 1.2)		7.5	6.0	6.5	1.0	1.0			6.0	6.1	
29/11/A Widnes— Compound Fertiliser	F	3.0	3.3		12.6	11.0	11.6	1.0	1.0			12.0	12.5	
28/2/A Lonsdale— Nitro-Chalk Fertiliser ...	F	15.5	15.6											A
29/2/A Lonsdale— Nitro-Chalk Fertiliser ...	F	15.5	15.7											B
30/2/A Lonsdale— Special Tomato Fertiliser ...	F	4.5	4.9		11.3	7.0	7.4	2.0	3.9			9.0	9.3	
30/11/A Widnes— Compound Fertiliser ...	F	0.0	0.07		20.1	0.0	0.4	20.0	19.7			10.0	9.5	



Table 32—continued.

Sample, Number, and Description.	Formal or Informal.	Per cent. Nitrogen.		Per cent. Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> ).								Per cent. Potash. K <sub>2</sub> O.		Other Figs. per cent.
				Total.		Soluble		Insoluble.		Soluble in Citric Acid.				
		G.	F.	G.	F.	G.	F.	G.	F.	G.	F.	G.	F.	
31/11/A Widnes— Fish and Bone Compound ...	F	6.5 (Or- ganic 3.0)	6.8 (Or- ganic 2.8)		8.6	5.0	4.7	4.0	3.9			5.0	5.5	
22/10/A Seaforth— Lettuce Manure	F	6.1	6.05		5.55	4.05	4.0	2.3	1.55			6.0	7.8	
23/10/A Seaforth— Base Fertiliser	F	5.5	6.7		4.95	2.2	1.9	3.5	3.05			12.0	11.0	
21/4/A Lower Blackburn— Sulphate of Amonia ...	F	20.8	21.05											C
20/9/A Manchester— Sulphate of Ammonia ...	F	21.10	20.8											D
34/11/A Widnes— Superphos- phate ...	F			19.5	19.6	18.0	18.7	1.5	0.9					
35/11/A Widnes— Sulphate of Potash... ..	F											48.0	46.5	
36/11/A Widnes— Tomato Fertiliser ...	F	4.5	4.8		6.4	5.0	4.9	1.25	1.5			8.0	8.6	
24/10/A Seaforth— Apple Base Fertiliser ...	F	6.0	5.8		2.8	1.0	1.3	2.0	1.5			6.0	7.2	
25/10/A Seaforth— John Innes Base ... ..	F	5.2	5.5		7.7	7.0	7.3	0.2	0.4			9.6	11.2	
37/11/A Widnes— Growmore Fertiliser ...	F	7.0	8.2		7.0	6.0	5.7	1.0	1.3			7.0	7.4	
38/11/A Widnes— Evergreen ...	F	5.0	4.9		6.1	1.0	0.9	5.0	5.2			4.0	4.8	
39/11/A Widnes— Bone Meal ...	F	4.0	4.0		22.0		Trace only	23.0	22.0					

G.—Guaranteed.

F.—Found.

A.—Guaranteed, Carbonate of Lime 48 (26.9 CaO); Found, Carbonate of Lime 51.8 (29.0 CaO).

B.—Guaranteed, Carbonate of Lime 48 (26.9 CaO); Found, Carbonate of Lime 50.4 (28.2 CaO).

C.—Guaranteed, Free Acid ( $H_2SO_4$ ) 0.02; Found, Free Acid—Nil.D.—Guaranteed, Moisture 0.20; Found, Moisture 0.3 and Free Acid ( $H_2SO_4$ ) 0.015.

*Table 33.*  
*Feeding Stuffs.*

Sample Number and Description.	Formal or Informal	Per cent. Oil.		Per cent. Protein.		Per cent. Fibre.		Other Figures, per cent.
		G.	F.	G.	F.	G.	F.	
24/2/A Lonsdale— Coarse Dairy Mixture	F	3·5	3·6	20·0	20·1	9·0	7·7	
25/2/A Lonsdale— Dairy Ration ...	F	4·5	4·3	19·0	20·4	8·0	8·3	
17/9/A Manchester— No. 1 Pig Meal ...	F	3·0	3·5	17·0	12·1	6·0	5·8	A
18/9/A Manchester— Battery Mash... ...	F	4·0	3·3	18·0	13·9	6·5	5·8	B
1/9/B Manchester— Growers Mix ...	I	4·0	4·5	44·0	42·3	2·0	2·1	
2/9/B—Manchester— Barley Meal ...	I						4·0	C
18/10/A Seaforth— Intensive Layers Pellets ... ..	F	3·0	3·2	17·0	18·6	6·5	6·7	
19/10/A Seaforth— Pig Fattening Meal ...	F	3·5	2·1	14·0	15·4	5·5	5·1	
18/7/A Bury— Highyield Dairy Mixture ... ..	F	4·0	4·2	22·0	26·0	7·5	7·5	
19/7/A Bury— Pig Fattening Meal ...	F	3·0	2·4	13·0	13·7	6·0	4·3	
17/6/A Leyland— Sow and Weaner Meal ... ..	F	3·0	3·0	17·5	15·6	6·0	5·6	
18/6/A Leyland— Battery Laying Mash	F	3·5	2·95	17·5	18·4	6·5	5·0	
11/5/A Higher Blackburn— Pig Food No. 2 ...	F	2·75	2·8	14·85	14·9	6·5	6·3	
12/5/A Higher Blackburn— Layers Mash ...	F	3·3	3·4	17·4	16·8	6·0	6·2	
18/4/A Lower Blackburn— Layers Mash ...	F	3·5	3·3	17·5	17·0	5·5	4·2	
19/4/A Lower Blackburn— Battery Mash ...	F	3·5	3·5	18·0	17·2	5·5	5·6	



Table 32—continued.

Sample Number and Description.	Formal or Informal	Per cent. Oil.		Per cent. Protein.		Per cent. Fibre.		Other Figures, per cent.
		G.	F.	G.	F.	G.	F.	
19/6/A Leyland— Pig Fattening Meal ...	F	3·0	3·3	13·5	14·1	6·0	4·5	
20/6/A Leyland— Sow and Weaner Meal ...	F	3·0	3·5	17·5	17·5	6·0	4·5	
20/4/A Lower Blackburn— Milk Equivalent ...	F	3·0	2·7	24·0	25·2	0·6	0·2	
19/9/A Manchester— Pig and Poultry Yeast ...	F		1·96	40·0	42·9			D
13/5/A Higher Blackburn— Cow Ration ...	F	5·0	4·25	14·0	17·2	7·8	9·9	E
14/5/A Higher Blackburn— Pig Ration ...	F	4·3	3·55	16·5	13·5	6·1	5·8	H
15/5/A Higher Blackburn— Pig Ration ...	F	3·55	3·4	13·5	14·0	5·8	5·4	
32/11/A Widnes— Coarse Dairy Meal ...	F	3·5	4·1	19·0	16·2	8·0	7·1	
33/11/A Widnes— Coarse Dairy Meal ...	F	3·5	3·5	19·0	17·5	8·0	8·8	

A.—Found, Moisture 14·1.

B.—Found, Moisture 13·8.

C.—Found, Sand and Other Silicious Matter 0·6 and Ash 2·2.

D.—Found, Sand and Other Silicious Matter 0·18 and Ash 7·74.

E.—Found, Moisture 11·6.

H.—Found, Moisture 12·0.

#### PART IV.—WATERS, EFFLUENTS, ETC.

##### *Potable Waters.*

Eighty-three samples of water have been examined during the year 1957 for suitability for drinking or domestic use. Of these 35 came from dairies. Three of the samples were examined for metallic contamination only and one sample, taken in connection with another water from a private supply which presented a treatment problem, was examined

for acidity only. The remaining 79 samples were submitted for full sanitary analysis, and are classified in the following table according to their source and organic purity.

*Table 34.*  
*Waters, 1957.*

Source.	Fit.	Doubtful.	Unfit.	Total.
Deep Well      ...      ...      ...	7	5	0	12
Shallow Well    ...      ...      ...	1	2	1	4
Upland Surface    ...      ...      ...	32	8	0	40
Spring          ...      ...      ...	14	2	0	16
Miscellaneous    ...      ...      ...	4	3	0	7
Total          ...      ...      ...	58	20	1	79

Forty-eight of the samples in the above table were taken from public supplies (10 deep well, 27 upland surface and one from a spring). Seven of these contained traces of nitrite. This can result from chemical treatment of the water or from reduction of nitrate as well as from pollution but special consideration of the bacteriological findings was advised in each case. Similar advice was given in the cases of three other waters, two containing traces of ammonia with traces of organic matter, and the other containing rather more ammonia than normal. All the other samples were of good quality.

Thirty-six of the 83 samples were submitted by the County Medical Officer of Health, and the others, by the following Local Authorities : County Boroughs of Preston, 2 ; Southport, 6 ; Boroughs of Chorley, 3 ; Darwen, 8 ; Haslingden, 1 ; Leigh, 1 ; Middleton, 2 ; Rawtenstall, 4 ; Urban Districts of Blackrod, 1 ; Orrell, 2 ; Ramsbottom, 1 ; Urmston, 1 ; Rural Districts of Fylde, 1 ; Garstang, 4 ; Lunesdale, 4 ; West Lancs., 1 ; Whiston, 2 ; Wigan, 3.

#### *Toxic Metals in Water.*

Samples of water which had been in contact with lead, copper, or zinc, either in service pipes or during storage, were examined for the presence of these metals.

Twenty-nine samples were examined for lead, and the results are summarised in table 35.



*Table 35.*

Lead parts per million.	None Detected.	Less than 0·3.	0·3 to 1·0.
Number of samples	22	6	1

The only water which contained more than the usually accepted limit of 0·3 part per million was an acid water from a private spring which had been conveyed through lead pipes.

Of the 19 waters examined for copper, only two contained significant quantities, these being 0·9 part per million, and 1·3 parts per million. The usually accepted maximum limit for copper is 1·5 parts per million. Both of these samples were taken as the result of complaints, the first of staining and the second because the water, which was also acidic in character, had caused pitting in aluminium cooking utensils.

The usually accepted limit for zinc in water is five parts per million, but a limit as high as 15 parts is accepted in at least one foreign country. None of the 14 samples examined for zinc, however, contained more than four parts per million. Six contained less than one part, and the remainder were free from zinc.

Iron was found in 18 of the 27 samples tested for it, and 13 of these contained quantities in excess of the 0·4 part per million which is usually regarded as the limit above which complaints of turbidity or staining may arise. The results are summarised in table 36.

*Table 36.*

Iron parts per million.	None Detected.	Less than 0·4.	0·4 to 1·0.	1·1 to 5·0.	5·1 to 10·0.	More than 10·0.
Number of samples ...	9	5	4	6	2	1

#### *Other Waters, Effluents, etc.*

Thirty-eight samples were submitted under this heading.

Four effluents were examined for compliance with the recommended standards of purity made by the Royal Commission on Sewage Disposal. One, taken in connection with a complaint about a foul brook, was found to be unsatisfactory, but the other three, two of which were taken in connection with the Mersey Rivers Board Survey of Effluents, were found to comply.

Seven of the eight waters from brooks and ditches were examined as the result of complaints, and six of them were unsatisfactory.

Twenty-one samples of swimming bath and sea bathing lake water were examined for compliance with the Ministry of Health Recommendations (pH should exceed seven but should not exceed eight, and free chlorine should not be less than 0.2 part per million, or much greater than 0.5 part per million.) Only one sample, from an open air bath, was low in chlorine. Fourteen contained more chlorine than the recommendation suggests but at least seven of these seemed to be due to using break point chlorination which requires higher residuals than those mentioned above. High chlorine doses are also frequently necessary at times of heavy bathing.

Two samples of seepage water were analysed to ascertain their probable sources.

Finally, waters from a river, a well, and a borehole were analysed in connection with an enquiry into their possible common origin.

#### PART V.—MISCELLANEOUS SAMPLES.

This section of the report includes those samples which, because of their nature or because of the circumstances under which they were obtained, could not be included in previous sections of the report. Three hundred and eighty-seven samples were examined under this heading and they were submitted as follows :—County Medical Officer of Health; 36 ; County Education Officer, 5 ; Chief Officer, County Fire Brigade, 2 , City of Lancaster, 69 ; County Borough of Preston, 78 ; County Borough of Southport, 26 ; Borough of Leigh, 58 ; Rural District of Chorley, 1 ; Forestry Commission, 96 ; 16 samples were also examined for the information of the laboratory. The work carried out on some of the more interesting of these samples is discussed briefly in the following paragraphs.

##### *Atmospheric Pollution.*

During the year 1957 work was continued on the determination of atmospheric contamination. During this period 127 deposits and rainwaters from soot gauges and 199 lead peroxide candles were analysed. These measurements were made on behalf of the County Borough of Preston, the County Borough of Southport, the City of Lancaster, the Borough of Leigh and the North West Conservancy of the Forestry Commission. Altogether these five authorities have set up 11 standard deposit gauges and 17 sulphur candle instruments.



The standard soot deposit gauge consists of a large glass funnel of known area leading into a bottle large enough to hold a month's rainwater. The soot and water collected are brought into the laboratory at the end of each month for analysis, the determinations carried out being those listed in table 37. The sulphur candles are porcelain cylinders of known area which are covered with a layer of lead peroxide prepared under standard conditions. This surface, on exposure at the site, reacts chemically with sulphur gases present in the surrounding atmosphere and when it is examined at the end of the month its sulphate content is proportional to the average concentration of corrosive sulphur gases in the air at that point for the whole of the month. This information is important as it is an indication of the effect of the polluted atmosphere on paintwork, metals, curtains, etc. It should be noted that, even if visible smoke and grit emission from chimneys are prohibited and smokeless zones become more common, sulphur gases will still be released into the atmosphere whenever coal or smokeless solid fuel is burned and it is these invisible gases which cause such damage to man, property and vegetation.

The results from the observations, as well as being of local interest, are also used as part of a nation-wide investigation by the Department of Scientific and Industrial Research to study any long term changes in atmospheric pollution and their possible effects on Public Health and other problems. The Forestry Commission's sites although in country areas can be affected appreciably by sulphur-dioxide produced many miles away and the survey has been undertaken to find out the effects of this gas on the growth of young trees.

To illustrate the nature and the magnitude of the results obtained in this type of work the average monthly figures for two of the sites in the Borough of Leigh are set out in tables 37 and 38 on page 122. These two sites are approximately only one mile apart, yet it will be noted that there is appreciably heavier pollution recorded by the Town Hall gauge. The latter is nearer the town centre and the tar, soot and ash are approximately twice the corresponding figures for the gauge at the Firs Maternity Home. Figure 1 shows the seasonal variation in the amounts of the various substances collected in the Town Hall gauge during 1957. The amount of soot collected was greatest in December, it remained relatively high during January, February, March and April, gradually became less in the Summer months and, rather surprisingly, declined to a minimum in November. The amounts of soluble sulphate recorded were at their greatest during the months of July and September. This, at first sight unusual result, is at least partially due to the very heavy rainfall experienced during these two months washing the soluble sulphur gases out of the atmosphere before they were dispersed and diluted by the winds.



FIG. I  
BOROUGH OF LEIGH, 1957.

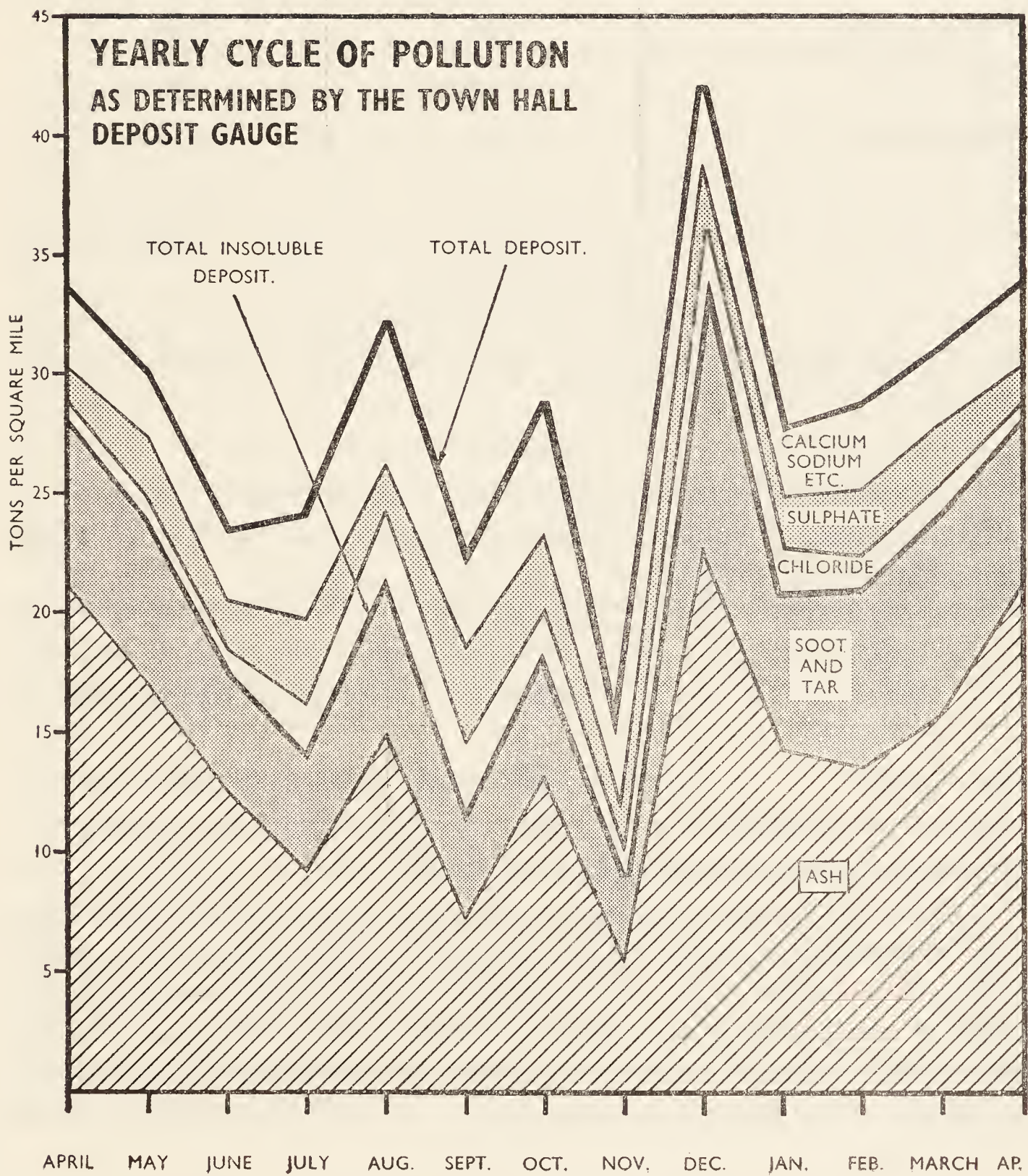
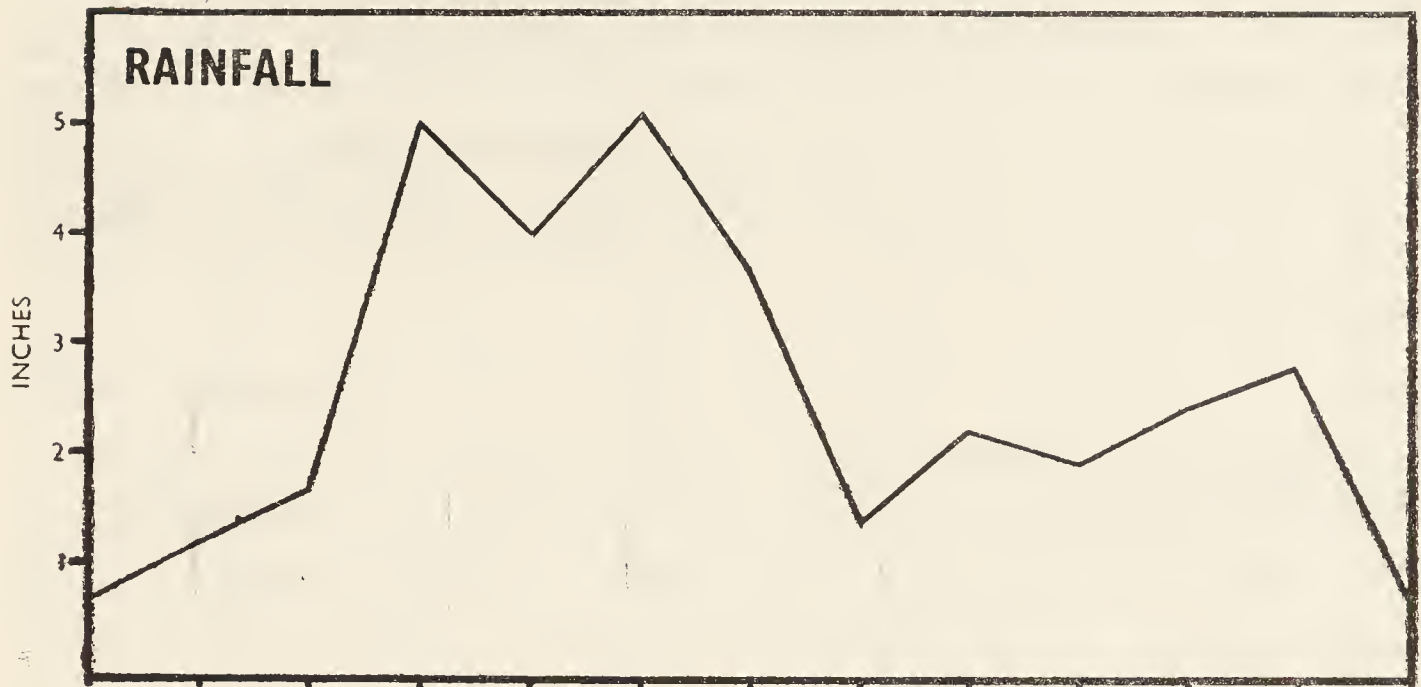




Table 37.  
Soot Gauge Observations, 1957.  
Monthly Averages in Tons per Square Mile.

Site.	Borough of Leigh.	
	Town Hall.	Firs Maternity Home.
Rainfall in inches ... ..	2.68	2.80
Tar ... ..	0.21	0.09
Carbonaceous matter other than Tar ... ..	6.26	3.48
Ash ... ..	13.91	6.11
Soluble Deposit ... ..	7.81	6.01
Total Deposit ... ..	28.19	15.69
‡Sulphate as SO <sub>4</sub> ... ..	2.59	2.20
‡Chloride as Cl ... ..	1.60	1.55
‡Calcium as Ca ... ..	0.62	0.39
pH ... ..	4.2	4.0

\* Insoluble Deposit.

‡ Included in the soluble deposit.

Note.—The monthly results for May were not available for the Town Hall gauge and estimated values have been used.

Table 38.  
Estimation of Active Sulphur by Lead Peroxide Method, 1957.  
Milligrammes of Sulphur Trioxide per 100 sq. cms. Batch “ A ” Lead Peroxide in Louvered Cover.

	Borough of Leigh.	
	Town Hall.	Firs Maternity Home.
Daily Averages ... ..	2.31	1.91

Extraneous Matter in Food and in Milk Bottles.

In addition to the samples of food submitted under the Food and Drugs Act which were found upon analysis to contain extraneous matter the following samples were also examined as the result of complaints. Of the 17 samples mentioned below, 16 were submitted by the County Medical Officer of Health and the remaining sample was submitted by an Autonomous Food and Drugs Authority.

*Milk Bottle, Sample No. M.7324.*

This pint milk bottle when received contained a very small quantity of sour milk and eight fragments of broken glass weighing in all 0.44 gramme. The top of the rim of the bottle neck was chipped and the fragments of glass in the bottle fitted exactly into the chipped area of the bottle neck. The results of the examination were brought to the notice of the bottler of the milk.

*Milk Bottle, Sample No. M.7352.*

This one-third pint milk bottle contained no milk when it was received but in this instance also the rim of the bottle was slightly damaged and seven very small particles of glass, weighing in all 0.0045 gramme were found inside the bottle. The vendor was cautioned.

*Sterilised Milk, Sample No. M.7358.*

This partially filled pint bottle of sterilised milk was submitted on complaint that it had an extremely bitter taste resembling that of quinine which made the complainant suspect that it had been contaminated with some extraneous chemical substance. When examined, in addition to the strong bitter taste, the sample had a putrid odour and was slightly sour (acidity as lactic acid 0.26 per cent.). When submitted to the Turbidity test for efficient sterilisation the sample gave a borderline result which in view of the then condition of the milk, was not, in your analyst's opinion, sufficient evidence on which to suggest that the milk when first processed would not have passed the test in a perfectly satisfactory manner. The results of the examination of this sample all pointed to the presence of heat resistant bacteria of the type of B-subtilis which are known to produce this characteristic bitter taste in milk and in sterilised cream, etc. A separate portion of the sample was submitted for bacteriological examination and the Pathologist's report confirmed the presence of organisms of the above type. The facts were brought to the notice of the dairy company responsible for the processing of the milk.

*Canned Mixed Fruit Salad, Sample No. M.7365.*

This opened can of imported fruit salad was submitted on complaint that it contained a dead blowfly. The blowfly was in fact dyed red with a dye identical with that in the cherries which formed part of the fruit salad. Mere contact with the dyed cherries did not, however, result in the dyeing of other blowflies from which it was inferred that the fly in question must have been in the cherries at the time that they were processed. The importers were communicated with and informed of the result of the examination.



*Breakfast Cereal, Sample No. M.7418.*

With this opened packet of breakfast cereal was submitted a dark coloured mass, weighing two grammes, which was stated to have been present in the cereal. Upon examination, however, the dark coloured mass had the same composition as the cereal except that it was partially carbonised and contained 670 parts per million of Iron, as against 37 parts per million of Iron in the normal part of the sample, indicating that it consisted of a portion of the breakfast cereal that had been overheated probably in contact with an oven plate or similar metallic surface.

*Milk Bottle, Sample No. M.7480.*

This one-third pint bottle contained traces of dried-up milk solids and a few dark coloured particles weighing in all 4·5 milligrammes. The foreign matter consisted of quartz-like particles which were either colourless, blue or dark green and had probably been derived from grit from a path, etc. The producer of the milk was cautioned.

*Milk Bottle, Sample No. M.7463.*

This one-third pint bottle was submitted on complaint from a school that it contained fragments of broken glass. The bottle itself was intact and not chipped in any way and, when submitted for examination, did not contain any milk. It did, however, contain 20 fragments of broken glass weighing, in all, 0·437 gramme; the largest single fragment weighed 0·338 gramme. The physical characteristics of the glass were typical of those of glass used in the manufacture of milk bottles. A prosecution was instituted under sections 2 and 113 (3) of the Food and Drugs Act against the dairy responsible for the processing and bottling of the milk. The dairy company concerned was fined £40 together with £5 5s. costs.

*Milk Sample No. M.7464.*

This full pint bottle of milk contained, adhering to the sides and resting on the bottom of the interior of the bottle, dark greenish coloured foreign matter which, upon examination, was found to consist mainly of algae filaments and fragments of several small flying insects (thrips). In view of the fact that a dirty bottle appeared to be the cause of the trouble, the matter was referred to the local sanitary authority concerned.

*Milk Bottle, Sample No. M.7488.*

This pint milk bottle contained traces of sour milk but, in addition, it contained a small amount of foreign matter, both loose and adhering to the glass, weighing 0·4 gramme, which had the composition of cement. Similar material was also found on the outside of the bottle suggesting

that, while empty, the bottle had been splashed with particles of freshly mixed cement. The vendor of the milk was cautioned with regard to the condition of the bottle.

*Milk Bottles, Samples Nos. M.7489 and M.7490.*

Both these partially filled one-third pint milk bottles, from the same source but delivered on different days, were submitted along with fragments of broken glass stated to have been present in each bottle. On examination, the inside rims of the necks of both bottles were found to be slightly damaged. No further particles of glass were found inside sample No. M.7489 but several very small fragments of broken glass, weighing in all 13 milligrammes, were found inside the bottle numbered M.7490. The vendor of this milk was cautioned.

*Milk Bottle, Sample No. M.7499.*

This one-third pint milk bottle was not broken or chipped. When submitted for examination it contained traces of sour milk and one piece of broken glass weighing 0.408 gramme. The shape and physical characteristics of the piece of glass were consistent with it having originally formed part of the inside of the rim of a similar bottle to the one submitted. The manager of the dairy concerned was interviewed in regard to this sample.

*Milk Bottle, Sample No. M.7500.*

This one-third pint milk bottle was submitted on complaint from a school. The bottle itself was not in any way chipped or broken. When submitted for examination it contained traces of partially dried milk residues but no evidence of the presence of any particles of broken glass was found. Submitted separately was a fragment of broken glass weighing 0.047 gramme and measuring approximately 11 x 2 x 2 millimetres. This fragment was stated to have been sucked up through a straw from the bottle into the mouth of one of the school children. A prosecution was instituted under Section 2 of the Food and Drugs Act but at the hearing of the case the Magistrates, although they found that the glass was in the milk, dismissed the case as they considered that the glass did not affect the substance of the milk. The County Council has entered an Appeal by way of case stated against this decision.

*Milk Bottle.—Sample No. M.7527.*

This one-third pint school milk bottle was submitted as the result of a complaint to an Autonomous Food and Drugs Authority. The bottle when received contained traces of dry milk residues and, adhering firmly to the interior bottom of the bottle, two hard brittle particles of a



grey substance which when detached weighed approximately 0·14 gramme. This material had the composition of mortar. The manager of the dairy concerned was interviewed and cautioned with regard to the condition of the bottle.

*Milk Bottle.—Sample No. M.7552.*

This one-third pint milk bottle was intact and no particles of broken glass were found inside the bottle itself. A small fragment was submitted separately which was stated to have originally been in the bottle. This proved to be a fragment of glass but it weighed only 0·0015 gramme and measured only two by one millimetres. The dairyman concerned was cautioned.

*Milk Bottle.—Sample No. M.7555.*

This pint square-sided milk bottle had been rinsed out and was dry when submitted for examination. The interior of the bottle on one side showed, however, slight greenish staining. On examination this was found to consist of a dried film of green algae and the shape and position of the film was consistent with the bottle having laid on its side for some time in daylight while it contained a small amount of liquid. The film of algae was most noticeable near the very defined shoulders of the bottle and it is probable that the shape of the bottle in question was at least partially responsible for it not having been thoroughly cleansed. A representative of the dairy company concerned was interviewed and cautioned with regard to the condition of this bottle.

*Piece of Bread and Fragment of Metal.—Sample No. M.7556.*

The very small piece of bread consisted of the corner of a crust which contained a cavity out of which the piece of metal described below was stated to have appeared. The piece of metal did, in fact, fit into the cavity. The metal consisted of iron, it was approximately nine-tenths inch long and pointed at both ends. It was dark blue-black in colour, could be permanently magnetised, weighed 0·63 gramme and appeared to have originally been part of a piece of steel sheeting, such as an oven plate. One side of the metal bore an old hardened film of baked dough and some cotton fibres; attached to the other side were two particles of bread crumb. The cavity in the piece of bread was discoloured with oxide of iron; this and the appearance of the piece of metal were consistent with it having been in the bread before it was baked. The bakers of the bread were interviewed and cautioned.

In addition to the above, the following samples may also be found to be of interest.

*Corned Beef, Sample No. M.7220.*

This sample weighed five and a quarter ounces and consisted of part of a can of corned beef submitted, as the result of a complaint, by an Autonomous Food and Drugs Authority. The sample showed approximately 20 discoloured patches both on the surface and in the interior of the meat. The staining varied from greyish-green to black in colour and the discoloured material was found to contain approximately 2,300 parts per million of iron whereas unstained material contained only 150 parts per million of iron. Your analyst was of the opinion that the staining was due to the effect of sulphur compounds, usually present in meat, on the iron. The presence of the iron could be due to spots of blood in the meat (blood is very rich in iron) or to contact with an iron surface during processing. Staining of this type is very common in canned meat and fish products and although unsightly is in no way harmful.

*Compound Fertiliser, Sample No. 7353.*

This sample was submitted by the Water Engineer of an Autonomous Authority to ascertain whether any deleterious substances were present which would militate against its use on land forming part of the gathering ground for a water supply. The material was an ordinary compound fertiliser and did not contain any added insecticide or selective weedkiller. Its impurities included approximately 200 parts per million of water soluble arsenic and approximately 3,200 parts per million of water soluble fluorine. It was indicated that if the volume of water resulted in a dilution of 2,000 times in relation to the arsenic content or 6,000 times in relation to the fluorine content, the amounts of arsenic and fluorine finally present would become insignificant.

*Condensed Full Cream Milk, Unsweetened, Samples Nos. M.7419 and M.7420.*

Both samples consisted of unopened cans of the same brand of condensed milk which were stated to be old stock. On opening, the contents of both cans were found to be slightly brown in colour and showed pronounced age thickening. The acidity (as lactic acid) of both samples was 0.42 per cent. and the tin contents were respectively 57 and 45 parts per million. These figures are not abnormal and the samples in other respects complied with the requirements as to composition of the Public Health (Condensed Milk) Regulations. Your analyst expressed the opinion that the samples were not of good marketable quality but there was no indication that the samples were chemically injurious.

*Mussels.*

Following a complaint that mussels in a river estuary were tainted, allegedly by mineral oil, seven samples were examined from this source. For comparison purposes a sample of imported mussels and three samples



from other parts of the coast were also examined. Weighed amounts of the edible portion of each sample (after cooking, if necessary) were heated with approximately 10 per cent. alcoholic potash and the total unsaponifiable matter extracted with ether. The unsaponifiable matter was then dissolved in petroleum ether and transferred to a column of activated alumina in order to bring about a separation of petroleum hydrocarbons from the natural unsaponifiable matter (amounting to approximately 0.5 per cent. calculated to the edible fish) of the mussels. On eluting the alumina column, first with petrol ether and then with benzene in petrol ether, the results given in Columns I and II in the following table, were obtained. The first three samples in the table were cooked or fresh mussels which were alleged to be tainted, the next four samples were gathered directly from different points on the same mussel beds about three weeks later. Sample No. M.7259 was a sample of imported mussels and the last three samples were from various other points on the West coast.

The analytical results given in the table are expressed in parts of hydrocarbons per million parts of the edible mussels.

*Table 39.*

*Mussels.*

Sample No.	Description.	Column I. Hydrocarbons Eluted by Petrol Ether.	Column II. Further Hydrocarbons Eluted by Benzene.	Column III. Amount in Column I insoluble in hot Sulphuric Acid.
M.7254 ...	Cooked in Vinegar ...	300	...	180
M.7255 ...	Cooked in Vinegar ...	260	110	100
M.7253 ...	Tank Purified ...	310	...	...
M.7260 ...	Direct from river ...	160	60	60
M.7261 ...	Direct from river ...	230	100	110
M.7262 ...	Direct from river ...	170	85	80
M.7263 ...	Direct from river ...	150	70	80
M.7259 ...	Cooked ...	30	Nil	Nil
M.7294 ...	Fresh ...	30	15	15
M.7256 ...	Tank Purified ...	80	...	50
M.7295 ...	Fresh ...	70	40	50

The hydrocarbons (Columns I and II) obtained from the first seven samples in the table had an odour of petroleum and were approximately two to four times the amounts present in samples Nos. M.7256 and M.7295 and as much as five to 10 times the amounts present in the imported mussels and in sample No. M.7294. A recovery experiment carried out by adding a small quantity of high viscosity crude fuel oil to the purest sample (*i.e.* M.7259, imported mussels) and carrying out the same analytical procedure showed that 35 per cent. of the amount added was recovered as purified hydrocarbons in Column I and a further 18 per cent. was recovered in Column II. Furthermore, the ultra-violet spectrographic absorption curves of the two fractions recovered from the fuel oil resembled very closely the curves obtained on the two corresponding fractions of hydrocarbons obtained from the complaint sample of mussels No. M.7255. The hydrocarbons insoluble in hot concentrated sulphuric acid obtained from the complaint mussels had a refractive index of 1.48 at 20°C and were insoluble in boiling acetic anhydride, this is a further indication that the hydrocarbons were of mineral oil origin. Samples No's. M.7253 and M.7254 were found to have a noticeable after-taste resembling that of mineral oil whereas the sample of imported mussels (No. M.7259) was bland in flavour and completely free from any taint.

As a result of the above investigation, your analyst was of the opinion that the analytical results obtained on the first seven samples confirmed that the original complaint of taint was justified.

Finally mention should be made of the following examinations carried out for other departments of the County Council. A sample of Oculent Sulphacetamid (10 per cent.), N.F. or B.P., was submitted by the County Medical Officer of Health. This preparation had been used in a Child Welfare Centre, it was noticed that it was discoloured and it was alleged to have caused, in at least one instance, skin irritation. It was ascertained that the material in question was approximately two years old. It is well known that this preparation does tend to discolour on storage and is then regarded as unsuitable for use. No direct cause of the alleged skin irritation was found other than it was noticed that the crystals in the discoloured material were noticeably larger than in normal material. It is possible that the irritation was purely mechanical due to this cause. Two samples of anti-freeze mixture for use in the cooling systems of motor vehicles were examined for the Chief Fire Officer in order to ascertain whether they complied with the contract specification. Lastly, five samples were examined for the Chief Education Officer. These included, a sample of washing powder examined to ascertain whether its soap and sodium carbonate contents and titre figure complied with the specification; two samples of pork sausages and two samples of beef sausage meat were also examined to ascertain that their compositions complied with the appropriate specifications.









